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Remarks
ON
POSTERIOR RHIZOTOMY FOR THE RELIEF OF PAIN.

BY
SIR WILLIAM THORBURN, K.B.E., C.B., C.M.G.,
CONSULTING SURGEON, MANCHESTER ROYAL INFIRMARY.

THE operation of posterior rhizotomy has been performed at intervals for the last thirty years; the first recorded case I have met with is one by Bennett,[1] in which some of the posterior lumbo-sacral roots were divided for sciatica, without much apparent benefit. Horsley,[2] Chipault,[3] and others have recorded cases; while Abbé[4] operated in two instances for intractable brachial neuralgia, excising the posterior roots and ganglia of the affected nerves, the result being that one case was somewhat improved and the other not benefited. The writer and others have also in the past deliberately divided the posterior roots of dorsal nerves in operating for tuberculosis and malignant disease of the vertebrae, with a view to the relief of pain caused by implication of such nerves as they pass through the intervertebral foramina. The earlier scattered cases have given somewhat doubtful results, but in some a persistent neuralgia has been completely cured by the operation.

The whole subject of rhizotomy came more prominently into notice with the publication of Foerster's work,[5] and was brought before the profession in this country more especially by Hey Groves.[6] In the *British Journal of Surgery* for October, 1914, are recorded a number of cases by various British surgeons, collected and analysed by Hey Groves, but since this date the war has largely diverted the current of surgical work, and in this country little more attention has been bestowed upon the operation.

Foerster adopted rhizotomy in connexion principally with three conditions—namely, the relief of spastic symptoms in the lower limb, especially those due to the cerebral hemiplegia of infants, the gastric crises of locomotor ataxia, and various types of pain. The present paper does not, however, propose to deal with the division of posterior nerve roots for the relief of spasm, as I have not adopted the operation for that purpose, and from the cases of others which I have observed I am not altogether satisfied as to its value, the difficulty of estimating which is largely increased by the fact that the operation has always been accompanied by careful nursing and instruction. We shall therefore for the present confine ourselves entirely to rhizotomy for gastric crises and for other painful conditions.

RHIZOTOMY FOR GASTRIC CRISES.

Gastric crises are conveniently divided by Foerster into two types:

1. The "*Vagal*," in which there is marked nausea, with but little pain or hyperaesthesia.
2. The "*Sympathetic*," in which pain and hyperaesthesia are common, but nausea is as a rule not very prominent. It is for the latter type of case that rhizotomy is principally recommended, and Foerster adopts bilateral resection of the dorsal roots from the fifth to the twelfth, with a view to cutting off entirely afferent impression within this area. He records 64 cases collected by himself, of which 6 died, 47 were cured or markedly improved, 9 underwent a certain amount of improvement, and 2 were unrelieved.[7]

In the *British Journal of Surgery* are reported 5 cases with no deaths, 2 failures, and 3 successes, but of the latter, 2 were too recent to allow of reliable inference. To these cases is added a sixth, in which death followed an operation for visceral crises in the bladder. Of the failures recorded in the *British Journal of Surgery*, one was a bilateral operation involving the sixth to the eleventh dorsal roots, and one, which involved only the eighth, ninth, and tenth on both sides, was probably too limited to give much hope of recovery. Of the successful cases, two were bilateral, involving the seventh to the tenth roots, and one case of my own, to which reference will be made immediately, was a unilateral division of the fourth to the eighth on the left side.*

*In every case the numbers given are inclusive; thus fourth to eighth means fourth, fifth, sixth, seventh, and eighth.

Personally I have now performed this operation for gastric crises in three cases; and as two of these date back to the year 1914, they afford sufficient ground for judging of the permanency of the cure.

CASE I.

M., the patient already referred to as reported in the *British Journal of Surgery* for October, 1914, is now 54 years of age. He commenced to have gastric crises at the age of 34, the pain being limited to the left side and associated with copious vomiting. The attacks increased in frequency, and were eventually almost continuous, while the intensity of the pain required him to take large quantities of morphine. In March, 1914, the dorsal roots on the left side only were divided from the fourth to the eighth, both inclusive. Relief of pain was immediate, but three attacks occurred at considerable intervals during the first two years after the operation.

Since then there have been no further attacks, and up to the present time (February, 1921) the patient is entirely free from these. He naturally presents various symptoms of locomotor ataxia, but is quite able to go on with his business, and his general health is good. He presents loss of sensation to pin-prick from the level of the fourth to the eighth dorsal segments, and loss of sensation to cotton-wool over a slightly wider area. There is no tenderness in the abdomen, even on very deep pressure. The sixth, seventh, and eighth motor roots have probably also been injured, as there is a little sinking-in of the lower part of the chest on respiration, and possibly this may be due to degenerative changes in the anterior roots or cornua, as some paralysis was noticed at the time of operation and then passed away in a few days. There are no "trophic" changes of the skin.

CASE II.

B. was admitted to hospital for bilateral pain extending from about the level of the nipple to that of the umbilicus, more intense about the level of the eighth dorsal segment and relieved to some extent by pressure on the epigastrium. Attacks of pain were felt daily and were accompanied by profuse vomiting. I operated upon him in January, 1915, dividing the fifth, sixth, seventh, and eighth posterior dorsal roots, and thus perhaps not extending my section quite far enough down.

In January, 1921, this man was again examined. He presented anaesthesia to pin-prick from the fifth to the eighth dorsal segments on both sides, and to cotton-wool over a rather more extensive area. There was no paralysis of any muscles and deep pressure was felt and roughly localized over the whole anaesthetic area; but there was no tenderness even on the deepest pressure over the subjacent viscera. The skin was normal. The patient states that attacks of pain recommenced about six weeks after the operation, and that they have continued ever since; but they now occur about once in six weeks, instead of daily as before the operation. His general condition as regards locomotor ataxia is bad, and he is much crippled by an arthropathy in the right hip, by difficulties of micturition, and by eye troubles, all associated with the primary disease. It is interesting to note that radiographic examination of the stomach showed on one occasion no abnormality, and on another some delay in emptying the viscus.

These two cases, then, present, after an interval of over six years, the one complete immunity and the other relatively great improvement as regards the crises, which alone the operation was designed to meet. The following is more recent, and does not yet offer materials for a judgement as to the end-result:

CASE III.

Mrs. W., aged 47, consulted me in October last, having suffered for twenty years from attacks of pain in the left side of the abdomen, with vomiting, and great exacerbation of these attacks during the last four years, so that latterly they had occurred every three or four days. She had had an operation performed on the gall bladder, but nothing pathological was there discovered. She presented typical symptoms of locomotor ataxia, which it is not necessary to detail. On November 8th, 1920, I exposed and resected the fourth to the eleventh dorsal roots on the left side only, producing the usual band of anaesthesia. The patient had two attacks of pain within the first week or two after the operation, but thereafter ceased to suffer from these for the six weeks during which she remained in hospital.

It will be noted that in these three cases Foerster's dictum as to the bilateral section of the fifth to the twelfth has not been followed, as I was doubtful whether so extensive an operation was essential. In the cases in which pain was limited to the left side the operation was unilateral only; in Case I, which was completely cured, it involved the fourth to the eighth thoracic roots; in Case III, which is so far relieved, the fourth to the eleventh roots were cut. In the partially relieved Case II the operation was bilateral, and concerned only the fifth to the eighth roots.

Apart from the main issue in the above cases, attention may be called to two points, namely, the completeness and permanence of anaesthesia, and the total absence of any

indication of trophic changes in the affected parts; in both of which respects the operation conforms to the results produced by dividing the sensory root of the Gasserian ganglion.

RHIZOTOMY FOR PAINFUL AFFECTIONS OF THE LIMBS.

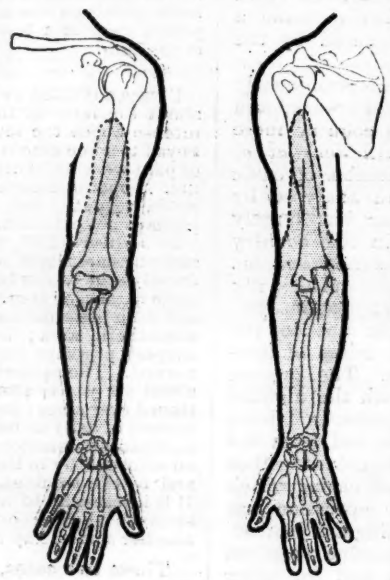
A considerable number of cases of rhizotomy for pain in the limbs have also now been recorded. Foerster[8] has collected 44, of which 6 died and 12 were cured, while 23 showed material improvement and 3 were untraced. In the British collection of cases already referred to there are 15 cases: In 1 the operation had to be abandoned, 1 died, and in 1 the result is unknown. Of the 12 which have been followed up, 8 were cured and 4 were failures. Several of the cured cases were examples of neuralgia of very limited type, in which only one root was divided, and more extensive painful affections were often apparently not relieved even by extensive operations. The great majority of the cases concerned the brachial plexus. The conditions for which the operation has been adopted are of the most varied nature. I have operated in two cases:

CASE IV.

A man had an injury to the right brachial plexus, followed by complete paralysis with anaesthesia and pain in the limb. The latter had, when he came under my observation in 1911, been amputated two or three inches below the shoulder-joint, naturally without giving relief. In March, 1911, I exposed the brachial plexus, finding a dense cicatrix, which extended completely up to the vertebral foramina. I excised the entire plexus, but without affording any relief to the pain.

In November, 1911, he was again admitted to my wards, and osteoplastic laminectomy was performed. The fifth, sixth and seventh arches were displaced. On opening the theca in the middle line, the dura mater was found to be closely adherent to the arachnoid on the right side, and had to be dissected away from the cicatrix thus produced. The roots of one only of the cervical nerves, apparently the sixth, were fairly well defined; but the remainder were contained in one cicatrix, which had to be dissected away from the spinal cord without differentiation between the anterior and posterior roots.

Recovery from the operation was uneventful, and the only marked change produced was paralysis of the cilio-spinal fibres, which had escaped or recovered from the original injury. Pain in the upper limb still continued, and two and a half years after the operation the patient wrote that although perfectly well and able to attend to his business, he did not think that he had obtained any material relief. It is clear that in this instance the roots of the plexus were avulsed from the spinal cord, and it is more than probable that changes had extended upwards in the central nervous system beyond the level of these roots.



CASE V.

CASE V.

J. received a bullet wound in the axilla in November, 1914, and in the early part of 1915 came under my care with extensive paralysis and anaesthesia of the left upper limb and severe causalgia. At that time I sutured the ulnar and inner head of the median nerve in the axilla without benefit.

He came under my care again in January, 1921; the muscles of the upper arm were in fairly good condition; he had slight power of flexion and extension of the wrist; all the intrinsic muscles of the hand were much wasted, the skin glossy, the nails long and curved, the wrist displaced to the radial side and the hand partially fixed in the position of pronation. There was continual pain in the palm, extending upwards in the front of the forearm for about one-third of the distance to the elbow-joint—that is, roughly in the distribution of the median nerve; but, although pain appeared to be severe and operation was welcomed, it could no longer be described as typical causalgia. Atrophy and paralysis involved both ulnar and median nerves. No accurate determination of anaesthesia was possible, but there was patchy loss of sensation to both cotton-wool and pin-prick on both front and back of the useless hand; the limb was quite useless. The general health was a good deal undermined by pain and the use of drugs.

On February 3rd, 1921, the fifth, sixth, and seventh cervical laminae were removed, and the sixth, seventh, and eighth cervical and first dorsal posterior roots were divided inside the theca, the ganglia not being excised. The fifth cervical root was not touched, as it was fairly remote from the affected area, and it was not thought advisable to run the risk of injuring motor fibres to the phrenic nerve. This man passed through one or two vicissitudes in connexion with an attack of influenza and sundry functional nervous phenomena, but by the end of February declared himself free from pain, except for an occasional headache. Anaesthesia did not appear to be quite complete in any part of the limb, except the fingers, but the mental condition made accurate registration impossible. Light touches with cotton-wool were, however, generally not recognized in the area shaded in the diagram, but pin-prick was generally felt in the whole limb, except on the back of the fingers; deep pressure appeared to be recognizable everywhere.

These two cases are sufficiently indicative of the uncertainty of relieving severe neuralgia by posterior rhizotomy, and Case IV shows very clearly how some painful affections of the limbs may be associated with changes extending into the central nervous system. It is, however, remarkable that of the published records the greatest proportion of good results has been obtained in those cases in which, for a limited neuralgia, one root only has been resected.[9] Beyond all question so limited a resection will not produce anaesthesia in the affected region, and the comparative success of the limited operation must be attributed to some other factor not yet fully explained. The existence of such other factor is also indicated by the success of my comparatively limited operations for gastric crises, and especially by that of Case I. It is also to be noted, both in the case of locomotor ataxia with gastric crises, and of long-standing neuralgia in any region of the body, that the results of operation are much confused by the highly neurotic condition of the patient. Many of these are accustomed to large doses of morphine, of alcohol, and of other drugs, and when in hospital they feel acutely the absence of such drugs. The case last mentioned showed various phenomena due to this cause. As a further illustration of the instability of the central nervous system in such patients, it is perhaps worthy of note that I have seen a case in which, after removal of the Gasserian ganglion, a typical hysterical anaesthesia involved the side of the body operated upon. A similar case has been recorded by Ormerod.[10]

In pleading for a more frequent use of rhizotomy, it appears to me important to point out that the dangers of the operation in practised hands are very much less than would appear from the published results. Thus, Foerster recorded 26 deaths out of 267 operations in which rhizotomy was performed for various reasons; and in the 58 cases collected from the *British Journal of Surgery* we find 6 deaths, the proportion in each case being about 10 per cent. If, however, we investigate the figures of individual surgeons, who have presumably a larger experience in the operation, we find a very different result.

In Burghard's *Manual of Surgical Operations* (1909) I endeavoured to determine the mortality of laminectomy for all causes. An analysis of 50 of my own cases yielded a death rate of 6 per cent., several of which were early cases and were examples of injury or of tuberculous or malignant disease. I was then able to state that "exploratory operations and operations for tumours and allied conditions have been uniformly successful so far as life is concerned; and even in the earlier and more tentative operations for injury there is only one case in which death was probably hastened by operation." At that time I was not able to include any large number of operations for drainage, rhizotomy, or the removal of intrathecal tumours; but since then I have performed many such operations, and the only case of death has been that of an extensive sarcoma involving the cauda equina and conus medullaris, quite irremovable and associated with advanced secondary changes in the bladder and kidneys.

Kuttner has performed rhizotomy 32 times with 2 deaths, Eiselsberg 12 with no deaths, and Elsberg 22 with no deaths. Adding my own to the above cases, we get 71 cases with only 2 fatal results; and every surgeon experienced in laminectomy will agree that the operation *per se* is not more fatal than that of laparotomy. Death is hardly to be contemplated as a result, except in cases where the original disease or the gravely deteriorated general health

introduces a special and serious factor. Even, therefore, if the results as regards cure of pain are still somewhat uncertain, and if we have more to learn as to the selection of cases and the scope of the operation, it is unquestionably well worth while to give these patients the considerable prospect of cure or relief offered by posterior rhizotomy.

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SYMPTOMLESS HAEMATURIA:

*A PLEA FOR EARLY INVESTIGATION.**

BY

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I WISH to direct your attention to the subject of symptomless haematuria, a condition of considerable importance, yet one which receives less attention than it merits; my main object in doing so is to impress on you the fact that such an occurrence is a matter of urgency until a full diagnosis has been made.

"Symptomless haematuria" is a term used to cover all cases in which haemorrhage occurs from the urinary tract unassociated with any other symptom or sign, such, for instance, as pain, urgent or frequent micturition, or a lump. The name is a bad one. In fact it is a misnomer, for haematuria itself, if evident to the naked eye, constitutes a symptom, and its occurrence can therefore never be symptomless. Perhaps it would be better if it were styled "unaccompanied haematuria."

Such unaccompanied bleeding is not at all uncommon, and may be the result of a very considerable number of pathological processes. Indeed there are very few of the many diseases of the urinary tract which do not sometimes give rise to haemorrhage, though with some of them bleeding is characteristic, whilst with others it is exceptional. If you will consider for a moment the vascularity of the organs concerned, it will not seem surprising that this is so. The kidney in particular is an organ of exceptional vascularity, and that portion of the bladder which is most susceptible to disease, namely the trigone, is also very rich in blood vessels.

Yet though so many lesions may be the cause of haematuria, in practice it will be found that unaccompanied bleeding is very suggestive of a urinary neoplasm. Indeed there is a well known dictum which states that "symptomless haematuria indicates a growth of the urinary tract." I quote this phrase to you with diffidence, realizing that medicine abounds with instances of similar dogmata, the majority of which are fertile sources of error and frequently denote a lack of scientific erudition. Yet it is with this probability in his mind that the surgeon will approach the investigation in any given case. That he will frequently find himself mistaken will be impressed on you if I refer to four cases of otherwise symptomless bleeding which have occurred in my own practice recently, and which on further investigation proved to be respectively:

1. A case of scurvy rickets.
2. A case of early renal tubercle.
3. One of that group of cases classified under the title of "essential renal haematuria."
4. Stone impacted in the pelvic outlet, in which, though the patient denied any history of pain, the parenchyma had been markedly encroached upon by back pressure.

Many other causes of symptomless haematuria might be recalled. Yet in a very large proportion of patients who pass blood in their urine without other symptoms, it will turn out that there is a neoplasm of the urinary tract. Walther, in a study of seventy-four cases of haematuria, both accompanied and unaccompanied by other symptoms, demonstrated that over 50 per cent. were the result of urinary growths, and that of these 72 per cent. were malignant. If his article had only referred to cases of symptomless haematuria the percentage of growths would have been much higher.

Two matters require investigation in all cases:

1. The anatomical point from which the haemorrhage originates.
2. The nature of the pathological processes giving rise to it.

Now I submit that of these investigations the former is a matter of some urgency. The latter could be dealt with at more leisure, but you must know at the earliest possible moment whether the bleeding is from the upper or from the lower urinary tract, and in the first alternative from which side the haemorrhage is coming. This last is the important thing. A growth in the bladder may be seen when the haemorrhage has disappeared, but symptomless bleeding from the upper tract must be diagnosed during an attack, for then the bloody efflux from one ureteral orifice can be seen and the corresponding kidney, or ureter, held culpable. Remember that in all cases which are truly "symptomless" there is only one real guide, and that is the cystoscope. There is no pain; there is no lump. You may get some doubtful information from the presence of blood well mixed with the urine, which is generally held to come from the kidney; or from the presence of worm-like clots which have received their shape from the ureter; but these are unsafe guides, and even they will not tell you from which side the bleeding is coming.

If you wait till there are other symptoms to guide you, you will run the grave risk that the case will become inoperable, yet such procrastination happens with great frequency. Hinman, in an analysis of the published work of eight different surgeons, found that in 709 cases of renal growths haematuria was the onset symptom in 42 per cent., but that when the cases came to operation only 6.6 per cent. showed haematuria unaccompanied either by pain or tumour, and he justly remarks that this "indicates the lost opportunity in making an early diagnosis."

Any of the tumours of the urinary tract is capable of causing symptomless haematuria, and more commonly than not they express themselves in this manner. In order to keep my argument clear I will limit myself to two of the commonest tumours of the tract—namely, papilloma of the bladder and hypernephroma of the kidney. These happen also to be two varieties which very consistently give rise to symptomless bleeding; the former, according to Hurry Fenwick, showing this as its first symptom in 84 per cent. of cases, whilst Israel states that the latter expresses itself thus in 70 per cent.

There is considerable variation in the period of their life-history at which they give rise to haemorrhage; in some cases we find that the first bleeding comes from a growth, papilloma or hypernephroma, which from its size must have been growing unsuspected for a long time. But in many cases it is quite early, when the growth is small. Such a haemorrhage coming from a small growth, whether of the bladder or kidney, may not be repeated before months, or occasionally even years, have elapsed, the growth in the meantime having become wellnigh untreatable. Surely this gives an uncanny importance to that single manifestation, and throws a grave responsibility on the medical practitioner to see that it is not allowed to subside without having been traced to its source. Generally the duration of that preliminary haemorrhage is not great—it is often only a few days or even hours. Denaclara states that in 146 cases of renal neoplasm only once did the primary haematuria last as long as fourteen days.

These two types of tumour each run a peculiar and almost invariable course, in that each in its earlier stage is non-malignant but in its later stage malignant. The papilloma in the early stage is single, has a long slender pedicle, and does not invade submucous planes. In the later stage it becomes multiple, subsessile or sessile, shows the typical tendency of malignant neoplasms to invade and disseminate, and eventually destroys life by anaemia and cachexia. Singularly enough hypernephroma in its early stages is also a benign growth. It is encapsuled, and it grows very slowly. It may exist in this condition for many years—cases have been reported up to twenty years—behaving in exactly the same way as do parotid tumours.

* A portion of a lecture delivered at the Salford Royal Hospital to a post-graduate class (January, 1921).

Later it also takes on malignant changes, growing more rapidly, invading its capsule and the renal vein, and disseminating. It is remarkable that two growths in the same tract should share this somewhat rare characteristic, but it only makes the importance of an early diagnosis more self-evident, for in the early stage the treatment is that of a non-malignant neoplasm, is easy and satisfactory, and a complete cure can generally be achieved, whilst later the growth becomes malignant and the prognosis proportionately unfavourable.

Nature is, as it were, in each of these cases holding out to us in the early stages the option of successful treatment, if we are but wise enough and shrewd enough to avail ourselves of the opportunity, but she will just as certainly snatch away the proffered chance if we do not seize and secure it, and the indication which she gives us of this dangerous condition is the preliminary haemorrhage which is often so transitory.

To recapitulate, I have tried to show that haematuria is frequently the only symptom of a growth of the urinary tract; that following this expression of its presence it may retire into absolute quiescence for a long period, during which it is probably increasing in size and advancing towards malignancy; that when it reasserts itself, whether by a second haemorrhage, or by pain, or dysuria, or the presence of a lump, it may have passed beyond the operable stage, and that, if the growth should prove to be of the upper urinary tract, the only time at which a diagnosis of the anatomical site can be made is during the period of actual bleeding.

The moral is obvious, but I fear is often missed, and this I wish to impress on your minds. Haematuria is not a symptom to be treated *per se*. It is a red danger sign, urgently demanding an accurate diagnosis—first as regards its anatomical point of origin, and secondly as regards its pathological cause. It is an easy thing to put a patient suffering from acute abdominal pain to bed, and give a hypodermic injection of morphine. Such a course will be followed by relief of the pain; but the profession has long ago learnt the hazard of such a course so long as any doubt remains in regard to the diagnosis. Similarly, it is an easy matter to put a man suffering from haematuria to bed, apply cold, and administer certain reputed haemostatics. Such a course may be rewarded by a cessation of the haematuria, and the medical attendant will have the gratitude of his patient, but surely, on contemplation, must have the mortification of realizing that he has done him a great disservice. Much better had it even been if he had kept him in active life, and rather sought to perpetuate the haemorrhage than to allay it, till such time as a cystoscopic examination could be arranged, and the source of the haemorrhage accurately located. Once the haemorrhage is stopped the opportunity has passed, possibly for a long period, and unless some gross swelling of one kidney can be palpated, or the patient is persuaded to submit to a cystoscopy, which may reveal some causative bladder condition, the golden opportunity has gone by and may not recur till much valuable time has been lost.

Instances of such misguided treatment are unfortunately only too frequent in any urinary practice. I will cite a single case which I have seen comparatively recently. A man had had a short sharp haemorrhage from the bladder three years previously for which he had been treated by his medical attendant with cessation of the haemorrhage. From this point onwards there was no symptom at all till he began to suffer from discomfort in the bladder region and the sensation of incomplete emptying of the bladder even when he had just urinated. Cystoscopy revealed a growth of such large dimensions that examination was difficult owing to the instrument plunging amongst the fronds of a papilloma, which on account of its size had to be removed by suprapubic cystotomy, and when this was done there was revealed a pair of lesser "kiss-cancers" on the opposite bladder wall. If this patient had undergone cystoscopy three years previously his condition would probably have been treated rapidly and easily by diathermy, and the open operation would have been unnecessary.

As the growth gets older the attacks of haematuria tend to become more prolonged, severe, and frequent. On certain occasions I have had to undertake the examination of patients who have been under treatment for continuous haematuria for weeks, a few of these having become absolutely blanched by loss of blood. In one instance a medical attendant informed me that he had attempted to knock off portions of growth by introducing a metal instrument and twisting it about in the bladder—a practice which is condoned in textbooks belonging to a past generation, but which obviously must be condemned in view of the possibility of ocular demonstration by modern methods.

These are the grosser errors, but I have nevertheless been much impressed with the late stage at which urinary growths reach the surgeon, and the consequent difficulty of obtaining good results in these cases. Indeed, if good results are to be obtained, the cases must come up at the first onset of symptoms.

That other urologists find the same trouble I am convinced. Braasch, in an analysis of a series of 83 cases of hypernephroma of the kidney, found that as an average haematuria had existed for more than a year in 77 per cent. before other symptoms precipitated treatment.

As a matter of fact the doctor is frequently not responsible for the delay, for patients often cannot be brought to realize the importance of the condition, so long as it is unaccompanied by pain or discomfort. I have on many occasions been astonished at the complacency with which patients, particularly amongst the uneducated classes, regard it, and have had on several occasions to use considerable pressure to persuade such to submit to a full examination of the urinary tract because they could not understand the importance of the condition. Bransford Lewis records the case of a man suffering from a hypernephroma of the kidney who carried about with him for six years a letter from his medical man to a consultant, in spite of the fact that blood was present in the urine all the time. Similar instances could be multiplied, though the duration in this case was extreme.

I have, however, laid emphasis on the responsibility of the medical attendant, because I consider the importance of an early cystoscopic examination has not been adequately brought home in the past. Had symptomless haematuria been as common as the acute appendix, it would have gone through the same phase that the acute abdomen experienced fifteen years ago, and would now be invariably submitted to immediate cystoscopy, just as the acute abdomen is invariably submitted to immediate laparotomy.

A SEROLOGICAL STUDY OF HAEMOLYTIC STREPTOCOCCI:

DIFFERENTIATION OF STREPTOCOCCUS PYOGENES FROM STREPTOCOCCUS SCARLATINAE.

BY

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ALTHOUGH definite progress has been made within the last twenty years, knowledge concerning individual races included within the family of bacteria presenting the common morphology of Streptococcus is still at an early stage. It is now fifteen years since streptococci commonly met with in disease were investigated by Andrewes and Horder with regard to their biochemical characters (Gordon), their haemolytic power (Schottmüller), and their pathogenicity for laboratory animals, and differentiated into three chief classes of *salivarius*, *faecalis* and *pyogenes*. This classification has stood, and to-day the three groups of *salivarius* or *viridans*, *faecalis* or the enterococcus, and *pyogenes* or *haemolyticus* are widely recognized. As scarlet fever is a disease in which streptococci are constantly present, and have been suspected of primary etiological influence, a special study was made independently by Cumpston and myself of the biochemical characters of the streptococci present on the tonsil and fauces at the onset of scarlet fever. It was found that, as regards the characters in question, the particular streptococcus present there with the greatest constancy and in the greatest abundance could not be distinguished from specimens of *Streptococcus pyogenes* recovered from sources other than scarlatinal.

These past studies of streptococci, however, did not include a scrutiny of their serological characters. As recent investigations have shown in case of both the

pneumococcus and meningococcus that among cocci indistinguishable in biochemical or other respects a number of distinct and apparently fixed serological races or types exist which breed true, it was obviously desirable to investigate streptococci again from this point of view, and to attempt to define the degree of antigenic diversity obtaining amongst them. Accordingly, towards the end of 1919, a study of the serological characters of streptococci occurring in hospital cases was begun on behalf of the Medical Research Council. This survey is still in progress; while specimens of all classes of streptococcus have been included in the investigation, the hospital material examined hitherto has yielded so many more specimens of haemolytic streptococci than of the others that the observations with regard to this group are now sufficiently advanced to submit them to publication.

Preliminary Classification of the Streptococci.

Except in case of blood cultures which are made in broth in the ordinary way, the medium employed for primary isolation is blood agar prepared as follows:

Procedure.

An ordinary agar plate is poured and allowed to set, and then a melted slope of trypagar is mixed with a little blood from the finger and poured on the top of the agar. The thin surface layer of blood-trypagar thus superimposed is ample for differentiating haemolytic colonies from others, and the medium is far more transparent, and the differences between colonies more evident than when blood is distributed throughout the medium. After a night's growth at 37° C. the sharply defined halo around colonies of haemolytic streptococci is readily seen on holding the inverted plate against a white background. Colonies of pneumococci and of *Staphylococcus aureus* may also produce a zone of haemolysis, but generally it is of minor degree in this time, and both these cocci are easily distinguished from haemolytic streptococci by the characteristic appearance of their colonies.

A single colony of the streptococcus is now carefully selected and subcultured on to a slope of trypagar the condensation fluid of which contains a drop of blood. In case of the haemolytic streptococci this condensation fluid shows well marked evidence of haemolysis next morning. Streptococci of the *salivarius* and *faecalis* groups as a rule fail to haemolyze the blood even after several days, but when *S. faecalis* is freshly isolated from the blood stream or from pus it not infrequently produces haemolysis; this coccus, however, is readily detected by the tests applied at the next stage.

The purity of the culture having been verified by microscopical inspection and ensured when possible by subculturing from a single colony on the trypagar slope, the next step is to test the ability of the streptococcus aerobically to ferment raffinose and mannite, and anaerobically to reduce the colour of neutral red broth. The raffinose and mannite are each in 1 per cent. solution, the solvent being ordinary meat broth with 1 per cent. of Witte peptone and ½ per cent. of salt; this broth is previously freed of its natural sugar content by cultivating *B. coli* in it, and litmus is added as indicator. In case of the neutral red, ordinary meat broth is used with addition of peptone and salt as before, and a suitable depth of colour is obtained by adding 2 c.cm. of a 1 per cent. solution of neutral red (Grubler) per litre. The reactions in these three media can be read off after forty-eight hours at 37° C. In case of some delicate examples of *salivarius* obtained by blood culture in malignant endocarditis, it may be necessary to add a drop of ascitic fluid to each tube in order to obtain growth. The reactions of the three chief classes of streptococcus in these tests is as follows:

Class.	Raffinose.	Mannite.	Neutral Red.
Pyogenes	−	?	−
Salivarius	+	−	+
Faecalis	−	+	+

While the vast majority of haemolytic streptococci fail to change mannite, a few do so. *S. salivarius* is uniformly negative in mannite, and *S. faecalis* as constantly positive in this test. Both *salivarius* and *faecalis* reduce neutral red under anaerobic conditions, but this test is not absolutely necessary: as its haemolytic power differentiates *pyogenes* from the other groups, and the two fermentation tests distinguish between *salivarius* and *faecalis*. It is important not to mistake the bleaching that *S. faecalis* usually produces in broth tinted with litmus for acid production; if the tubes are shaken and allowed to stand the colour returns, and the neutral tint of the raffinose is then seen to be in strong contrast to the acidity of the mannite.

After its physiological characters have been tested in this way and its class determined, the serological characters of the streptococcus are submitted to investigation. Owing to the tendency of suspensions of many of the commonest haemolytic streptococci to undergo spontaneous agglutination, the criterion of mere agglutination was abandoned at an early stage of the inquiry, and recourse had to the absorption of agglutinin test, which has been found to be of no less value in defining the streptococcus group than it proved previously for a similar purpose in case of meningococci.

Procedure when Applying the Absorption of Agglutinin Test to Haemolytic Streptococci.

The method employed was similar to that used when investigating meningococci. So far little or no difficulty has been experienced in applying the absorption test to streptococci of the *salivarius* and *faecalis* groups. In case of the haemolytic streptococci, however, the difficulties at first were considerable and delayed progress for several months. Eventually these difficulties were surmounted, but in its application to the commonest strains of haemolytic streptococci the absorption test is still far from easy, and occasionally calls for considerable patience. For this reason the following details with regard to technique may be useful.

Preparation of Suspensions.—In order to obtain a dense suspension of the streptococcus, surface plates of trypagar enriched with ascites fluid have been employed. After incubation for a night at 37° C., 2 to 3 c.cm. of distilled water is poured over each plate and the growth suspended therein. This suspension is examined microscopically, heated to 65° C. for one hour, and well shaken. One-tenth of a cubic centimetre of the suspension is then diluted and its density determined by a turbidity test similar to that employed when estimating the density of suspensions of meningococci. In the case of the majority of the haemolytic streptococci the sole use of this suspension was for saturation tests; the density required for this purpose being approximately 50,000 million particles per cubic centimetre. When working with the *salivarius* and *faecalis* groups far weaker suspensions than this suffice to remove the specific agglutinin from a serum. By adding the required amount of 8.5 per cent. saline the cocci used for saturation are suspended in 0.85 per cent. saline.

Selection of Type Strains.—The cocci used as index or type strains must satisfy two requirements: they must possess good agglutinogenic power, and they must make good suspensions, that is, suspensions of uniform turbidity that do not show macroscopically any auto-agglutination in twenty hours at 55° C. While haemolytic streptococci vary in agglutinogenic power the selection of a good strain for this purpose is comparatively easy by experiment. The majority of strains of the commonest type of haemolytic streptococcus, however, exhibit a strong tendency to spontaneous agglutination, and for this reason are unsuitable for use as type strains. It was by good fortune that the earliest haemolytic streptococcus selected as a type strain was found to form excellent suspensions that were free from this tendency to auto-agglutination. Later on, when another strain was substituted for it, the suspension was not satisfactory until the larger particles had been removed either by filtering the suspension through the thinnest filter paper, or by allowing it to stand in a cylindrical glass (a 100 c.cm. measure) for several hours so as to deposit these heavier particles. Having obtained a satisfactory type strain, it is advisable to make stock cultures of it at once, either on gelatine or egg medium, and to keep them at room temperature, so that should the strain after frequent subculture become supersensitive and take to agglutinating spontaneously, a fresh culture free from this fault can be obtained from the parent culture. This liability to auto-agglutination is especially prominent in specimens of the commonest type of *S. pyogenes*. So far, it appears to be much less developed in examples of other types of haemolytic streptococci; and in case of streptococci of the *salivarius* and *faecalis* groups up to the present little or no difficulty has been met with from this cause.

Preparation of Agglutinating Serum.

Rabbits of from 1,000 to 2,000 grams were used, and the injections given intravenously at intervals of forty-eight hours, dosage being controlled by the animal's weight. The primary dose was 500 million of the killed suspension, and the final dose from 10,000 to 20,000 million. Haemolytic streptococci are weaker in agglutinogenic power to the rabbit than specimens of the *salivarius* and *faecalis* groups. In case of the former a titre of 1 in 400 is usually as much as can be obtained, though 1 in 800 is sometimes possible, especially with the rarer types, whereas in case of the non-haemolytic streptococci serums with titres of 1 in 1,000 to 1 in 2,000 are easy to prepare.

Example of an Absorption Test.

The following are required: (1) A fresh suspension (50,000 million per c.cm.) in saline of each of the cocci to be tested and similar suspensions of the coccus homologous to the serum, and of a coccus of known heterologous type for use as controls.

(2) Sufficient of a dilution (one thirty-second of its full titre) of the type agglutinating serum to allow of 1 c.cm. for saturation with each of the cocci to be tested, and of 3 c.cm. in addition for the three controls—namely: (*a*) For dilution with saline only; (*b*) for saturation with the homologous coccus; and (*c*) for saturation with the heterologous coccus. (3) A centrifuge tube for each of the cocci to be tested and for the three controls. (4) A water bath at 37° C. for standing the centrifuge tubes in while saturation is in progress. (5) Racks of small tubes (3in. by ½ in.) plugged with wool. (6) A 55° C. incubator.

Procedure.—One cubic centimetre of the diluted serum is placed in each centrifuge tube. One cubic centimetre of saline is added to the first, and a similar amount of each coccus suspension in turn to the rest. The centrifuge tubes are then shaken, placed in the 37° C. water bath and again shaken from time to time. After two hours at 37° C. the tubes are taken out and centrifuged till clear, after which the supernatant fluid of each is put up in four dilutions against an equal quantity (½ c.cm.) of a freshly made suspension (2,000 million per cubic centimetre) of the index coccus homologous to the serum. Two controls of this index suspension are also put up, one against saline, the other against normal serum diluted in the same way as the type serum. The racks are placed in the 55° C. incubator and the result read off next morning.

It is essential that the suspension of the index coccus should not be agglutinated in the controls of saline and of normal serum, and that the agglutinin should be removed by saturation with the homologous coccus, but unaffected by saturation with the coccus of known heterologous type. As a rule, cocci of the same type as the coccus homologous to the serum remove the agglutinin quite as completely as the homologous coccus. If there should be any doubt as to this absorption the test is repeated. The following is an example of the result of a saturation test carried out in this manner:

Type Serum and Coccus S.P.T.(1), Strain M.

No.		1 : 50	1 : 100	1 : 200	1 : 400	
1	Normal serum	−	−	−	−	controls.
2	Type serum unsaturated	+	+	+	(+)	
3	Type serum saturated with homologous coccus	−	−	−	−	
4	Type serum saturated with heterologous coccus	+	+	+	+	
5	Type serum saturated with Coccus A	+	+	+	+	
6	Type serum saturated with Coccus B	−	−	−	−	
7	Type serum saturated with Coccus C	(+)	−	−	−	

\+ = Well-marked agglutination.

As regards the controls, No. 1 proves that the index suspension is satisfactory since this has not agglutinated with normal serum; No. 2 shows that the agglutinin of the type serum is active; and No. 3 and No. 4 show that this agglutinin is absorbed by the homologous coccus, while it is unaffected by saturation with the heterologous coccus. Of the remaining three cocci, A fails to remove the agglutinin and is therefore of heterologous type, while both B and C have absorbed it, and therefore are homologues of the type coccus and agglutinin here employed. In the case of Coccus C, the saturation can if desired be repeated, since a trace of agglutinin still remains unabsorbed in the first dilution; but this is hardly necessary, since over three-quarters of type agglutinin has been absorbed; a degree of reduction that no coccus of heterologous type could effect.

Serological Types of Haemolytic Streptococci.

All the haemolytic streptococci submitted to serological investigation had been found to exhibit the cultural and biochemical characters of *S. pyogenes*. By the absorption of agglutinin test these streptococci have been resolved so far into three different types. In considering the frequency and distribution of these types it will be convenient to deal with the streptococci according to the sources from which they were isolated, and to take them in the following order:

1. Haemolytic streptococci from the tissues in ordinary hospital cases.
2. Those from cases of puerperal sepsis.
3. Those from the respiratory tract in various conditions.
4. Those from the tonsil at the onset of scarlet fever.

1. *Haemolytic Streptococci from the Tissues of Ordinary Cases.*

Either localized streptococcal infections or cases of streptococcal septicaemia or meningitis furnished all of the 68 streptococci now under review. The actual sources and the number of specimens from each were as follows: Cellulitis 15, erysipelas 3, abscess 9, arthritis 5, meningitis 8, empyema 4, osteitis or osteomyelitis 3, otitis media 2, peritonitis 1, ophthalmitis 1, and impetigo 1. Streptococci were obtained by blood culture during life from one case of pyrexia of uncertain origin, from two cases of cellulitis, from a case of mastoiditis, and from one of pyelitis. Eleven streptococci were recovered *post mortem* from the heart's blood of the following cases: Trauma with septic wounds 2, septicaemia after hysterectomy for cancer 1, terminal septicaemia in pernicious anaemia 1, in secondary anaemia 1, in nephritis 2, in bronchopneumonia 2, in strangulated hernia 1, and in a case of gangrene of the leg.

No fewer than 66 of these 68 haemolytic streptococci were found to absorb the specific agglutinin prepared against one of them, and the group which they form was accordingly designated Type I. The two non-absorbing streptococci were injected into rabbits and agglutinin prepared against each, with the result that the cocci were found to represent two different types. The first of these streptococci, designated Type II, had been obtained in pure culture from the heart's blood of a rapidly fatal case of influenzal pneumonia. The last streptococcus, Type III, had been isolated from an ear discharge developed a few days before death by a girl of 9 in the last stages of rheumatic endocarditis, and was also recovered from the bronchial secretion after death.

2. *Haemolytic Streptococci from Cases of Puerperal Sepsis.*

Streptococci possessing the cultural and fermentative characters of *S. pyogenes* were isolated from ten cases of puerperal sepsis and examined. The actual sources from which they came were as follows: Cervical secretion 2, blood culture during life 5, blood culture after death 2, and one streptococcus came from the peritoneal pus in a case of abortion. On submitting them to the absorption of agglutinin test all of these ten streptococci proved to be specimens of Type I.

3. *Haemolytic Streptococci from the Respiratory Tract.*

Streptococci with the characters of *S. pyogenes* were isolated from the following materials: One specimen each from nasal secretion in chronic rhinitis and from laryngeal secretion in Ludwig's angina; two specimens from tuberculous sputum, and two more from the post-nasal secretion in chronic post-nasal catarrh. On submitting them to the absorption of agglutinin test all of these six streptococci proved to be examples of Type I.

Bronchial Secretion.—In order to determine the serological characters of haemolytic streptococci occurring in bronchial secretion this material was obtained *post mortem* at the bifurcation of the trachea and examined in 27 cases. No fewer than eighteen of these specimens of bronchial secretion failed to yield haemolytic streptococci. Although twenty of the cadavers showed pulmonary lesions, haemolytic streptococci were only isolated in nine instances. The positive cases were as follows:

(1) A girl of 9, with rheumatic "pancarditis" and terminal bronchopneumonia; (2) a man of 24 with acute pleurisy and myocarditis, fatal within forty-eight hours; (3) a child of 6 with bronchitis and empyema; (4) two men, one of 57 the other of 58, with septic pneumonia associated with breaking down of carcinoma in the lung; (5) a baby of 1 year and 3 months who had succumbed to acute bronchopneumonia—in this case the bronchial secretion showed chiefly *B. influenzae*, but a haemolytic streptococcus was associated with it, both in the bronchial secretion and in the heart's blood; (6) a man of 35 with tuberculous bronchopneumonia and meningitis: (7) a girl of 24 with morbus cordis and bronchopneumonia; (8) a man of 23 with bronchiectasis and amyloid disease of the kidneys, liver and spleen.

Out of the 9 haemolytic streptococci thus obtained from bronchial secretion no fewer than 8 were found by the absorption of agglutinin test to be examples of Type I. The single exception came from Case (1): It proved to be a specimen of Type III, and identical with a haemolytic streptococcus obtained from the ear discharge of this same patient a few days before death.

Tonsils.—The tonsil has been investigated for haemolytic streptococci by two different procedures—namely, either by direct examination of the freshly excised tonsil, or by swabs taken in the ordinary way. The opportunity of examining the freshly excised tonsils I owe to the

courtesy of Mr. T. H. Just, F.R.C.S., who removed them in course of his routine duties.

The tonsil was held in a piece of clean filter paper and its surface seared with a hot iron, the capsule slit open with a sterile knife, and three loopfuls of the contents distributed in 3 c.cm. of broth. A drop of this broth was then spread over the surface of a blood-trypagar plate, and any haemolytic colonies isolated and examined. When dealing with swabs, the swab was stood in a tube containing 3 or 4 c.cm. of broth and well shaken; a drop of the broth was then carefully spread over a blood-trypagar plate. The results were as follows:

Results.

Excised Tonsils.—Out of 24 tonsils removed from children for hypertrophy, and showing no definite naked-eye evidence of sepsis, 8 yielded a growth of haemolytic streptococci. Five of these streptococci proved to be specimens of Type I, one was a specimen of Type II, and two were specimens of Type III. Definitely septic (purulent) tonsils were examined after removal from two patients, the first of whom had developed rheumatic symptoms and endocarditis; in both cases the tonsils were heavily infected with a haemolytic streptococcus of Type I.

Swabs taken of the tonsil in four cases of acute tonsillitis yielded in three instances specimens of *S. haemolyticus* Type I, and in the fourth a haemolytic streptococcus apparently different from all the three defined types and not yet identified. A case of follicular tonsillitis and two cases of early measles accompanied by angina each gave a specimen of *S. haemolyticus* Type I. In three cases of diphtheria a haemolytic streptococcus accompanying the Klebs-Loeffler bacillus was a specimen of Type I. During an outbreak of infectious catarrhal sore throat in a school, six children in the acute stage and twelve convalescent children were swabbed by my colleague Dr. Richard Armstrong, and a special search made for haemolytic streptococci on blood-trypagar plates. Only one case was positive, and the streptococcus there present proved to be a specimen of Type I.

Summary.—Out of a total of 21 haemolytic streptococci isolated from the tonsil and investigated 17 proved to be specimens of Type I, 1 of Type II, and 2 of Type III; one specimen could not be identified with any of these types. Including the haemolytic streptococci from all parts of the respiratory tract a total of 36 specimens have been investigated, of which 31 proved to be specimens of Type I, 1 of Type II, 3 of Type III, and one could not be identified.

The distribution of serological types among all the haemolytic streptococci examined up to this point is as follows:

Source.	Specimens.	Type I.	Type II.	Type III.
General	68	66	1	1
Puerperal sepsis ...	10	10	0	0
Respiratory tract ...	36	31	1	3
Total	114	107	2	4

The outstanding feature of these results is the predominance of Type I, which undoubtedly represents the commonest form of *Streptococcus pyogenes*. It is of interest to recall that Hammerton examined six specimens of this streptococcus serologically and found them identical, and further, that in a recent monograph Douglas, Fleming, and Colebrook report a similar serological identity among twenty-four specimens of *S. pyogenes* isolated from war wounds. The last observers also found that the mannite-fermenting form of *S. pyogenes* is serologically identical with strains not fermenting mannite—a point which I can confirm, as 3 of my 107 specimens of Type I fermented mannite, while the remaining 104 failed to do so.

A further point calling for notice is that specimens of all the types of haemolytic streptococci were obtained from the respiratory tract. The two specimens of Type II came respectively from the heart's blood of a fatal case of influenzal pneumonia and from a hypertrophied tonsil. The four specimens of Type III came from three patients—two specimens from hypertrophied tonsils, the other two from the ear discharge and bronchial secretion respectively of a girl of 9 who succumbed to rheumatic carditis. It may be mentioned that among 125 haemolytic streptococci obtained chiefly from the respiratory tract during an outbreak of bronchopneumonia, Dochez, Avery, and Lancefield distinguished at least four different types by agglutination and by protection tests, and consider that further types exist in this locality.

4. *Haemolytic Streptococci from the Fauces at the Onset of Scarlet Fever.*

Having prepared the way by these control observations, I was now in a position to investigate the serological characters of haemolytic streptococci occurring in the tonsillar and faucial secretion at the onset of scarlet fever. From previous observations made on behalf of the Local Government Board it was known that at the earliest stage of scarlet fever a streptococcus indistinguishable from *S. pyogenes* in cultural and biochemical respects and virulent to the mouse occurs there with great constancy and abundance. It was of much interest, therefore, to see if this scarlatinal streptococcus is serologically identical with any of the defined types of haemolytic streptococci, and the present investigation appeared to be the more timely since observations recently published in America by Tunnicliff and Bliss had indicated that this scarlatinal streptococcus is serologically distinct from *S. pyogenes*.

For the present purpose it was indispensable to obtain material from cases of scarlet fever within the first week, and so typical clinically as to be beyond all doubt. Through the courtesy of Dr. Foord Caiger and the assistant medical officers of the South-Western Fever Hospital, I was provided with swabs from ten such early cases of scarlet fever. These swabs were treated in the same way as those described in the preceding section. Nine of them gave a profuse growth of colonies of haemolytic streptococci which in four cases far excelled all other bacteria in abundance on the plates. From different parts of each positive plate two haemolytic colonies were subcultured and the cultural and biochemical characters of each streptococcus examined, with the result that all were found to be indistinguishable from *S. pyogenes* in these respects. Two of the streptococci that formed the best suspensions—each from a different case—were injected into rabbits and agglutinin prepared against each of them.

It was found that none of these 18 scarlatinal streptococci absorbed the agglutinin of either Type I or Type II *S. haemolyticus*.

On proceeding to carry out absorption tests with the agglutinin prepared against the two selected scarlatinal streptococci it was found that these two streptococci were identical, since each absorbed the agglutinin of the other equally as well as its own. Of the 18 scarlatinal streptococci 16 were found to absorb this agglutinin, and among these 16 was at least one streptococcus from each of the 9 positive cases. Specimens of each of the three defined types of haemolytic streptococci were now put up against the agglutinin of the scarlatinal streptococci, with the result that while Types I and II failed to remove it, Type III absorbed the agglutinin equally as well as the scarlatinal streptococci. It would appear, therefore, that the scarlatinal streptococci are identical with Type III.

Two of the haemolytic streptococci isolated from the scarlatinal throat failed to absorb the agglutinin from the serum prepared against the scarlatinal cocci, and also failed to absorb the agglutinin of the three types of *S. haemolyticus* previously defined. These two streptococci, therefore, are as yet unidentified.

SUMMARY.

1. By the absorption of agglutinin test haemolytic streptococci have been differentiated up to the present into three distinct groups or types.

2. Of these Type I is by far the largest. To this serological group belong the vast majority of specimens of haemolytic streptococci from localized or general streptococcal infections, from cases of puerperal sepsis, and from infections of the respiratory passages other than scarlet fever. Type I, in fact, represents *Streptococcus pyogenes*.

3. So far Type II is rare: only two specimens of it have been obtained.

4. Type III is chiefly to be found in the secretion on the tonsil and fauces in scarlet fever. Serologically this *Streptococcus scarlatinae* is quite distinct from *Streptococcus pyogenes*. The observations of Tunnicliff and Bliss to that effect are confirmed.

In view of this serological individuality of the haemolytic streptococcus present in the angina of scarlet fever it is clear that we must be prepared to revise our views on its significance in that disease. The opinion that this streptococcus represents merely a secondary infection in scarlet fever was based mainly on the view that it is

indistinguishable from specimens of *S. pyogenes* recovered from sources other than scarlatinal. This view is now untenable. The possibility, therefore, must be realized that the streptococcus in question may ultimately be established as the essential cause of scarlet fever. Its exact significance, and also its practical application as regards the diagnosis and specific treatment of scarlet fever have still to be decided. As the problem is one of considerable practical interest and importance, it is hoped that the present communication may be of use to others who may have the opportunity and inclination to investigate the matter.

In conclusion, I wish gratefully to acknowledge the help received from my colleagues at St. Bartholomew's and from Dr. Caiger in obtaining material for this investigation, and also to record the valuable assistance of Mr. J. Heagerty, my laboratory assistant, in applying the absorption test to the relatively large number of haemolytic streptococci that it has been necessary to examine.

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Remarks ON POSTURAL OR SO-CALLED STATIC DEFORMITIES.

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(*Concluded from page 590.*)

II.

IN the first part of this paper[1] I gave a brief account of the physiology of posture, based on the work of Sherrington, who has shown that the upright attitude or posture of the body is maintained by continuous tonic reflex muscular activity. It was seen that this "postural activity" is of a special kind, quite different from the muscular contraction which gives rise to movement; that it is capable of being maintained for long periods without fatigue; and that it is controlled by a special nervous mechanism of its own. Attention was directed to the profound influence which the higher parts of the central nervous system exert upon postural activity, both in health and disease, and I endeavoured to show the practical bearing of these observations on the etiology and treatment of curvatures of the spine. Postural deformities are due to deficient postural activity, and the following pages deal with the application of this principle to flat-foot and other deformities hitherto described as "static."

FLAT-FOOT.

There are still some people who believe that the arch of the foot is supported by ligaments, and that the muscles merely serve to move the foot in obedience to the will. This view is utterly opposed to our conception of the function of ligaments and of the physiology of posture.

The natural form of the foot as a whole is determined by the shape of the individual bones, whose articular surfaces are adapted to one another in what may be called the neutral position of the foot.

[1] BRITISH MEDICAL JOURNAL, April 23rd, 1921, p. 587.

The ligaments keep the several bones in normal apposition, resisting gross displacements, and helping to restore the bones to their normal resting positions after the slight displacements which continually occur during ordinary use of the foot. To this extent, and to this extent only, the form of the foot is maintained by ligaments.

It is not the function of ligaments to withstand *continuous strain;* this is a function of *muscles.* The correct attitude of the feet in standing is a part of the postural reflex which maintains the body as a whole in the upright position. The mechanical force of gravity in the upright position tends to abduct and evert the feet, and this actually happens in a child learning to walk before the postural reflex is established. The postural reflex, in so far as it concerns the feet, consists of adduction and inversion—which does not mean that the feet are visibly held in that position, but that the tendency to passive abduction and eversion by the body weight is continuously resisted. Incidentally, the inner border of the foot is drawn upwards to a greater or less extent, so as to form an arch, and the body weight is taken up by the postural muscles and distributed to the outer border of the foot, the heads of the metatarsal bones and the heel.

From this time onwards the normal attitude of the foot, including the arch, is maintained by continuous reflex muscular activity. This postural activity, as we have seen, is of a special kind, capable of being maintained continuously for long periods without fatigue, and controlled by a special nervous mechanism of its own.

Flat-foot is either caused by, or accompanied by, deficient postural activity. Some of the conditions which may modify or inhibit the postural reflex have been considered in connexion with scoliosis. Mental fatigue or inertia, temperament, occupation (apart from prolonged standing), anaemia, constipation, adenoids, etc., all have a place in the etiology of flat-foot as in that of scoliosis. The deficiency of postural activity may be manifested generally or locally. Some patients develop postural scoliosis or kyphosis, others postural flat-foot, while in many cases scoliosis and flat-foot are associated in the same individual as parts of a general loss of tone. Not infrequently there are accompanying vasomotor disturbances—for example, flushing, profuse sweating, susceptibility to chilblains, oedema, etc., significant of the functional (perhaps sympathetic) origin of the deformity.

But, although postural activity is capable of being maintained for a long time without fatigue, there is a limit to the amount of strain that even a postural muscle can stand, and under modern conditions of civilization the strain thrown on the feet is often far in excess of anything that Nature intended. The result is that in many cases simply by continuous standing the postural reflex is at last tired out, and the body weight, overcoming the resistance of the muscles, passively abducts and everts the feet. Prolonged standing is thus one of the commonest causes of flat-foot in adults. It is hardly necessary to point out that conditions which give rise to a primary deficiency of postural activity may be, and frequently are, combined with occupations which entail long hours of standing, so that both causes may operate together, and no sharp dividing line can be drawn between these two groups of cases.

There is a third class of case in which the postural reflex is inhibited by some local condition. Pain in the foot inhibits the local postural reflex. Flat-foot, therefore, commonly follows sprains, fractures, or other injuries of the foot (traumatic flat-foot) and painful inflammatory conditions, such as gout, rheumatism, gonorrhoea, etc. (inflammatory flat-foot). With regard to the last named affection, it may be said that reflex inhibition from pain has far more to do with the causation of gonorrhoeal flat-foot than has any inflammatory softening of the ligaments, as commonly described in the textbooks.

Cases of flat-foot, therefore, fall roughly into three groups:

1. Those in which the immediate cause is deficient postural activity;
2. Those which are due to continuous strain by which the postural reflex is exhausted; and
3. Those in which the local postural reflex is inhibited by some painful condition of the foot itself.

Pain in the foot not only inhibits the local postural reflex, but it frequently induces an abduction-eversion spasm, which is a fixation of the flexion reflex commonly evoked by painful stimulation of the foot. Spasm, therefore, is

usually present in cases of traumatic and inflammatory flat-foot, and it occurs also in a certain proportion of cases which are due to standing. It never occurs in the cases due to a primary postural deficiency.

It is common knowledge that a very considerable distortion of a joint may be brought about slowly and gradually in the course of time without provoking pain or spasm. But rapid distortion of a joint is painful, and quickly resented by spasm of the muscles acting on the joint. Thus it happens that, when flat-foot develops slowly and gradually, as it usually does, it is unaccompanied by spasm, but when the deformity develops rapidly, it is likely to be accompanied by spasm. Spasmodic flat-foot is rapid and painful flat-foot. Spasm does not occur in the cases primarily due to deficient postural activity, because in them the deformity develops gradually, and is practically unresisted. It occurs in some of the cases which result from prolonged standing, because in them there is no primary loss of tone, the foot is in fact crushed down against resistance, so that the whole foot is strained, and the rapid distortion which results sets up a reflex protective spasm.

The arch of the foot is, perhaps, the least important thing about this badly named deformity. Some people have naturally high arches, and some have low ones. A very considerable amount of distortion and pain in the foot may occur before there is any apparent sinking of the arch, and some of the severest symptoms of flat-foot are met with in feet which are not flat. On the other hand, the arch may be low or even flat without any other symptom of flat-foot, and it does not follow that such a condition is pathological. Many barefooted savages have absolutely flat feet, yet they are perfectly normal. Their feet are strong and supple, they grip the ground as they walk, and they adapt themselves perfectly to every call that is made upon them.

The only thing that matters is whether the postural muscles take up the strain of the body weight, as they should, and distribute it to the best advantage to the natural points of support of the foot, or whether they are inefficient and allow the body weight to fall continuously unrelieved upon the joints and ligaments of the foot, so as to strain them and distort them and give rise to symptoms.

Treatment of Flat-foot.

The treatment of flat-foot is (1) to restore the natural form of the foot, if necessary; (2) to relieve the postural muscles from strain, or in other words, to keep the foot in the correct position during the period of recovery; and (3) to re-establish the postural reflex.

1.

If the foot is rigid or fixed by spasm, its natural form cannot be restored until it is made supple. Such feet, therefore, may require forcible correction and immobilization as a preliminary measure. I have, however, come to believe that spasmodic flat-feet can be made to yield to the corrective influence of a properly shaped boot, and I very rarely employ forcible correction and plaster now.

2.

Forcible abduction and eversion of the foot by the body weight throws a tremendous strain on the postural adductors, and these muscles cannot recover their function unless they are relieved from strain. It is necessary, therefore, before postural activity can be restored, to keep the foot constantly in a correct position, so that the muscles are relieved from strain. It is true that when the foot is supple this position can be voluntarily assumed. But voluntary muscular action is quite different from postural activity, and it cannot be sustained on account of fatigue. It is necessary, therefore, to employ some artificial means of securing the correct position during the period of recovery.

I have never been able to persuade myself that it is a rational or a scientific procedure to put a rigid support (foot-plate, arch support) under the arch of the foot. In the normal foot the inner border or arch is raised off the ground; there is an empty space beneath it, and obviously it was never meant to rest upon anything. It is also rather a tender part of the foot, and direct pressure upon it is not, as a rule, well borne. A rigid moulded arch support creates quite an artificial condition; it converts the elastic foot into a rigid system, and I cannot but believe that it prevents that muscular re-education which is essential to true recovery.

Of course, if one starts from the point of view that flat-foot is incurable, it may seem rational to establish an artificial condition in which the arch is mechanically supported from below, as upon a crutch. But, as a routine procedure, this seems to me to shirk the real treatment of flat-foot, just as the indiscriminate use of spinal supports in scoliosis is a confession of failure. Our experience is that comparatively few patients can tolerate rigid foot-plates, and that those who do can hardly ever dispense with them.

In the absence of normal muscular control the correct position of the foot is a question of balance rather than of support. The human foot has no true stability of its own. There is a mid-position, on one side of which the body weight thrusts downwards and inwards, causing abduction and eversion of the foot, and on the other side of which the body weight flows downwards and outwards, the foot being adducted and inverted. There is no mean resting place, no point of stability in the mid-position. It follows, therefore, that the foot must be kept adducted and inverted to just beyond this mid-position in order that the postural muscles may be relieved from strain. This result can be obtained by giving the foot a tilt in the boot sufficient to throw the body weight definitely over to the outer side of the middle point. Nothing short of this degree of tilt will suffice; anything over it is enough.

To apply this principle in practice the foot must be held in a boot that fits well enough to make the foot follow its movements. It is then common practice to give the whole boot a tilt by raising its inner side. This is the principle of the so-called valgus wedge. A valgus wedge that is not sufficient is as useless as no wedge at all. One frequently sees boots with valgus wedges on patients who nevertheless crush down their arches, because the body weight still falls inwards. It is entirely irrational to prolong the heel in such a case, so as to support the waist of the boot from below. If the waist is crushed down the tilt is insufficient. If the tilt is sufficient the waist of the boot is not crushed down, and a prolonged heel is superfluous.

In my experience the simple valgus wedge commonly fails because the insole of the boot, although tilted, is still a plane surface. Upon an inclined plane surface the foot cannot find its natural points of support, but it slips bodily towards the lower or outer side, where it comes to rest against the "upper" of the boot. The natural points of support of the correctly placed foot are the heads of the metatarsal bones, especially the first, the outer border, and the heel. These parts of the insole must be depressed or "bedded," so that the foot may drop into them, and, if this is correctly done, the foot will adapt itself to the insole and assume its correct position. I have come to regard the moulded insole as the best of the artificial means of controlling the supple flat-foot, and I have found that at least some cases of rigid and spasmodic flat-foot will yield in time to this device.

3.

The only real *cure* of flat-foot is restoration of the local postural reflex. In cases of primary postural deficiency the treatment of the *patient* is of first importance. The general treatment of postural deficiency and of the conditions which give rise to it is indicated in postural flat-foot, just as in cases of postural scoliosis.

When the postural deficiency is local and merely incidental to the deformity, the treatment of the *foot* comes first. If the foot is supple, the patient can voluntarily invert it and stand on its outer border. This action is the same as that of the postural reflex, with this difference—that it is voluntary and phasic and therefore cannot be maintained, whereas the postural reflex is subconscious and tonic and capable of being continued for long periods without fatigue. The postural reflex can, however, be re-educated by voluntary action constantly repeated until it becomes habitual—or in other words, by exercises.

There is only one exercise which need be done for flat-foot, and that is the movement of inversion—getting on to the outer borders of the feet. The patient should be told not to make a set "exercise" of it, but to do it always, everywhere, whenever he is standing about, to make a

fidget of it, until it becomes a habit and the attitude which it induces becomes habitual.

Set exercises t.d.s. do not make habits. A complicated series of exercises, if ordered, will be done only at certain fixed times, and the patient will not make of them a habit, as he will of a single simple movement which can be done at all times, anywhere, without preparation, and with hardly a thought. As a matter of fact, the majority of exercises are conceived with the totally erroneous idea of strengthening or developing certain muscles. Postural deformities are not due to weak muscles, but to deficient reflex activity. The object of exercises is to re-educate a reflex, and this is done by voluntary effort constantly repeated until the action becomes habitual or reflex.

There is only one person who can cure a flat-foot, and that is the person who has got it. The patient should be made to realize this, and his active co-operation should be secured. I have been accustomed to say that within limits the cure of flat-foot depends more on the patient's head—that is, his intelligence and co-operation—than on the state of his feet.

It is futile to order massage in an ordinary case of flat-foot or scoliosis. The patient who is having massage, and especially the patient who is paying for it, expects to *be* cured, and gets no further than that.

COXA VARA: GENU VALGUM.

There are certain other deformities which I cannot help thinking will eventually come to be included among postural deformities. They are particularly the coxa vara and the genu valgum of adolescents, hitherto described as constitutional, idiopathic, non-rachitic, non-traumatic—in other words, their pathology is unknown.

I quite agree that the more carefully one goes into the history of cases of coxa vara, the more often will one obtain a history of some preceding injury. But there still remains a group of cases in which injury can be definitely excluded, and I do not think that anyone claims a traumatic origin for adolescent genu valgum.

We have, then, a condition in which a bone or part of a bone which is normally subjected to great stress and strain from weight-bearing in the upright position, for some reason or other fails to resist that stress and strain, and becomes slowly deformed in consequence. All these cases show also flat-foot or other signs of deficient postural activity.

Now, every functional use of a tissue is in a sense an injury, or at least a stress and strain, to which the tissue reacts by calling to itself an increased blood supply. This is a local vascular reflex evoked through the sympathetic, and it is the normal mechanism whereby increased nutrition is secured to every functionating tissue, including bone. It is the explanation of the increased growth and development of a part which results from use, and conversely, the absence of this reflex is the explanation of the atrophy which results from disuse and still more so from paralysis. It may be taken as the physiological basis of Wolff's law, which briefly states that form and structure are determined by function. There is no evidence of the existence of any specific trophic nerves to the tissues of the body.

Now, if we rid ourselves of the idea of the older anatomists and pathologists that bone is a rigid unalterable structure, and if we regard bone as a living plastic material constantly undergoing changes of absorption, new formation and rearrangement, a structure which meets stresses and strains not by merely sitting under them, but by actively responding to them, calling to itself by reflex action increased nutrition, so that it may strengthen itself against them—in short, if we form a physiological and dynamic conception of bone rather than an anatomical and static one—we shall be able to view these deformities in a different light from that which has hitherto been usual.

We can picture to ourselves a bone suffering from the stress and strain of normal weight-bearing, and calling for that increased blood supply and nutrition which is so necessary but does not come, because for some reason or other the vascular reflex is in abeyance. In such circumstances, instead of strengthening itself to meet the stress and strain the bone simply becomes weaker, because function without physiological adjustment of blood supply, that is, nutrition, is pure destruction.

Thus we begin to see how a functional nervous condition might conceivably bring about such a surprising thing as actual structural alteration and deformity of a bone. For structure is the outcome of function; function is inseparable from nutrition; nutrition in functionating tissues is entirely a question of a co-ordinated blood supply, and the normal mechanism for co-ordinating the blood supply to any part is by means of reflex action through the sympathetic nervous system.

This activity of bone may indeed be described as postural. For, just as a postural muscle is called into activity by impulses arising within itself in response to the stimulus of gravity, so is the bone called into a state of physiological activity by impulses arising within it in response to the stimulus of weight-bearing.

A peculiar interest, therefore, attaches to the evidence which has been brought forward as to the sympathetic innervation of skeletal muscle, and to Sherrington's observation that the activity of the muscular walls of the blood vessels (which, of course, are supplied by the sympathetic) is also postural, that is, it exhibits the same features of plastic tonus—adaptability without change of tension, the lengthening and shortening reactions, etc.—as posturally acting skeletal muscle. These observations go to show that there is a close relation between postural activity of skeletal muscle and the weight-bearing capacity of bone, both being under control of the same nervous mechanism, and therefore liable to be affected by the same disturbances, whether functional or organic.

There is also an anatomical relationship between postural activity and weight-bearing. The internal structure of cancellous bone has been described as a "crystallization of lines of force"—that is, the lamellae are arranged in lines corresponding to the principal stresses and strains falling on the bone. In the trunk and lower extremities, at any rate, these lines are determined by the habitual positions of the bones in relation to the force of gravity in the upright position. These habitual positions are determined by postural activity, and any deficiency of the normal postural activity will therefore cause the lamellae of the bones concerned to come out of alignment with the force of gravity.

Anatomists describe certain mechanisms—for example, the Y-shaped ligament of Bigelow at the hip-joint and the locking mechanism of the knee-joint in full extension—whereby it is claimed that the upright position can be maintained without the necessity for continuous muscular action at these joints. But, as a matter of fact, the upright position *is* maintained by continuous muscular action, and these mechanisms do not come into action in the natural attitude of standing. It is true that when the muscles of the hip and knee are paralysed, stability may be secured by hyper-extending these joints until the checking action of the ligaments comes into action; but this is quite abnormal. In ordinary standing both the hip and knee are slightly flexed, and they can at any moment be extended or hyper-extended by an effort, but the attitude thus assumed is unnatural, irksome and fatiguing.

Deficiency of postural activity brings the lamellar structure of bone out of alignment with the force of gravity. The natural reaction of the bone is to bring about a rearrangement of the lamellae in accordance with the altered direction of the stress and strain. But this is a slow process involving absorption and new formation of the lamellae, and meanwhile the bone is at a great disadvantage as regards its weight-bearing capacity.

I would put forward the view that lack of resistance, that is, inability to withstand the strain of weight-bearing, in parts of the bony skeleton may equally well be a result of deficient postural activity, as is the corresponding default of the postural skeletal muscles.

Thus, to deficient postural activity of central origin, as already described, we may assign some of the cases of coxa vara, genu valgum, and I may now add the osseous deformity of postural scoliosis, all coming on slowly at about the age of adolescence, and all associated with deficient postural activity of muscle.

CONCLUSIONS.

Postural deformities are due to default of the normal mechanism for maintaining the body in the upright attitude.

This mechanism is a nervous one, for it has been shown by Sherrington that the upright attitude or posture of the

body is maintained by tonic reflex muscular activity (postural activity).

Postural activity is of a special kind, capable of being maintained for long periods without fatigue, and controlled by a special nervous mechanism of its own. It is quite distinct from phasic or voluntary muscular contraction.

There is evidence that the sympathetic nervous system may be directly concerned with the postural activity of skeletal muscle.

The higher parts of the central nervous system—the labyrinths, the cerebellum and the cerebral cortex—have a profound influence on postural activity.

It is suggested that in many cases postural deformity originates as a functional nervous disorder, and that the cause is to be sought in the mental rather than the physical condition of the patient. Attention is drawn to the frequent association of postural deformity with neurasthenia and with a neuropathic family history.

There is a close relationship between the postural activity of skeletal muscle and the vascular reflexes which determine the blood supply, and therefore the nutrition of all functionating tissues, and it is suggested that herein may lie the explanation of the bony changes which occur in postural deformities.

Among postural deformities are included cases of scoliosis, kyphosis, flat-foot, coxa vara, genu valgum, and possibly others—all arising from the same common etiological factor: deficient postural activity in the upright position.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DIFFERENTIAL STAINING OF CARCINOMATA.

WRITING subject to correction, I have not hitherto noted any record of a histological staining method which enables one to pick out scattered carcinoma cells in sections illustrating very early secondary glandular invasion. It is obviously of first importance to be able to identify early carcinoma histologically, whether primary or secondary, and it is often extremely difficult to ascertain early glandular invasion where there are only discrete or scattered groups of two or three carcinoma cells in the section. The ordinary methods, such as haematoxylin and eosin, fail signally in such cases, the cancer cells being usually indistinguishable from the closely packed leucocytes in such sections. If, however, the section (not thicker than 0.08 mm.) is stained for ten minutes at 37° C. with Mayer's haemalum (British Drug Houses), washed in several changes of tap water and counterstained with Van Gieson's stain (Strangeways's formula) for fifteen seconds, and then dehydrated, cleared and mounted in balsam, it is quite easy to pick out the carcinoma cells individually or grouped in early glandular invasion, for they stain characteristically. The cytoplasm stains a dirty light brown colour and the nucleus a much lighter violet than that of the nuclei of the gland cells proper. The contour of the cell is typical and the eccentricity of the nucleus also aids one, but the point I wish to emphasize as so characteristic is the colour and prominence of the cytoplasm, especially with natural illumination.

If a gland with advanced invasion be cut it will be seen that the cells I have described partake of the same features as those of the growth masses. A little practice enables one to pick out carcinoma cells with ease and comfort. It is hardly necessary to add that the method is of as great or greater value in very early primary growths.

I have found this method invaluable since I first used it, some two years ago, and I surmise that this record will be of interest to fellow workers.

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AN OPERATION FOR RETROFLEXION OF THE UTERUS.

IT seems to me that the varied operations on the round ligament which have for their object the cure of persistent retroflexion of the uterus are all open to question with regard to their efficiency. With this idea I have devised the following method, which, so far as I am aware, has not been described before:

The abdomen is opened just above the pubes a little on either side of the mid-line. At a point on the external surface of the abdominal wall, about two inches from the edge of the wound and a little above the pubes, a ligature carrier of forceps pattern armed with stout silk is made to penetrate. When through the wall the blades are separated a little to widen slightly the aperture made; the carrier is then passed around the round ligament about an inch and a quarter from the uterus. Both ends of the silk are now grasped by the carrier and withdrawn through the aperture at which they entered, taking the silk, which being pulled upon brings out a loop of round ligament. This manœuvre is repeated on the other side. The uterus will now be found to occupy the normal position. The next step is to dissect up a strip of the aponeurosis parallel with its fibres and at the edge of the aperture made; this strip should be about a quarter of an inch wide and of sufficient length to be passed easily under the loop of round ligament and stitched back in its bed with interrupted sutures. The round ligament is not stripped of its peritoneal covering, which will now line a new canal for the ligament to play in with the movements of the body. The abdomen is closed in the usual way.

With this method the entire length of the ligament is still of use if ever the uterus becomes pregnant. There is no chance of its giving way, and, owing to its proximity to the uterus, its support is permanently maintained. I visited to-day a multipara upon whom I performed this operation in the Gisborne Hospital six months ago, and without any prompting she said: "I have never been so well for years; I do not know myself; I am never irritable." Dr. Bowie, of this town, has since told me that he has performed this operation on four cases with complete success.

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DISLOCATION OF THE RADIUS FORWARDS AT THE INFERIOR RADIO-ULNAR JOINT.

ANTERIOR dislocation of the radius at this joint is perhaps of sufficiently rare occurrence to warrant description of a case, particularly as the lesion was produced as a result of a "back fire" when "cranking up" a car, and therefore constitutes one of the many so-called chauffeur's injuries.

The patient, aged 39, complained of pain in the right wrist from having previously received a blow from the starting handle of his car. When seen there was much swelling round the wrist-joint, tenderness on palpation, and pain on movement. In addition to some ligamentous tearing being present, a fractured carpal bone was suspected, and a skiagram was obtained which revealed a forward dislocation of the radius at its ulnar articulation. No evidence of any fracture in the carpus was apparent, and the wrist was carried forwards on the radius. The triangular fibro-cartilage had obviously been loosened and probably some of the lower fibres of the interosseous membrane were torn, in addition to the anterior and posterior inferior radio-ulnar ligaments. Reduction was not difficult, and full pronation was maintained with the wrist dorsiflexed.

It is now six weeks since the accident occurred, and there is full movement at the wrist-joint, with no undue laxity of the inferior radio-ulnar articulation.

I am indebted to Mr. John Murray for giving an opinion on this case.

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PREVENTION OF INTESTINAL OBSTRUCTION AFTER VENTROFIXATION.

MR. ALEXANDER DON, of Aberdeen, in his article on the prevention of intestinal obstruction after ventrofixation (April 16th, 1921, p. 563), recommends stitching the bladder and peritoneum above to the anterior surface of the uterus after reflexion of a corresponding peritoneal covering of the uterus, thus obliterating the space between uterus and bladder below the fixation stitches.

For years I have simply used a continuous suture to unite the two peritoneal surfaces, uterus and bladder, beginning at the reflexion between uterus and bladder and stitching up to the fixation stitches. The peritoneum is in this position fairly loose, and at the reflexion easily picked up by a pair of forceps. This completely obliterates the space. A number of pregnancies which have followed have been quite normal, as have also the labours, the last woman being delivered before either the nurse or the doctor arrived. There has never been any obstruction, to my knowledge, in any of the cases.

Nelson, Lancs. R. STEWART, L.R.C.P. and S., D.P.H.

Reports of Societies.

TREATMENT OF LEPROSY AND TUBERCULOSIS WITH SODIUM GYNOCARDATE.

IN the Section of Tuberculosis and Pharmacology of the Royal Society of Medicine, on April 19th, Sir LEONARD ROGERS read a paper, detailing in large part experiences in India, on "The treatment of leprosy and tuberculosis with sodium gynocardate." This substance given subcutaneously, he said, had proved painful and slow in action, and therefore its injection intravenously had been tried, and the results were good. It was given in very slight doses (1/5 c.cm. of a 3 per cent. solution), and severe reactions customarily followed, after which the leprosy lesions tended to clear up. In one patient, an Indian of very high position, who had suffered from leprosy for twenty years, and had enormous thickening of parts of the face, the very minute dose given intravenously brought on a reaction which lasted for a month, and in the course of a year the whole of the thickened nodules disappeared, and altogether the patient showed the most remarkable improvement the speaker had ever witnessed in a case of such long duration. In another case an enormous lesion of the nose began to shrink after treatment and cleared up, a slight pitting only remaining. Attention was then turned to other substances, partly with a view to tackling the acid-fast bacillus of tuberculosis; in this condition, for fear of producing a generalized tuberculosis, he did not feel justified in using sodium gynocardate intravenously. The fatty acids of cod-liver oil were separated out and sodium morrhuate obtained, and experiments were also made with linseed oil (which yielded a product very irritating to the tissues), Japanese sardine oil (which was very toxic), and soya-bean oil (which gave rise to a product quite painless on injection and not toxic). Out of 51 leprosy cases treated with sodium gynocardate, one—the worst case he had ever seen—showed no improvement, 9 showed slight improvement, 20 very great improvement, and 21 complete disappearance of the lesions, with a bacteriologically negative result. With sodium morrhuate, out of 20 cases, 3 showed slight improvement, 12 very great improvement, and 5 the disappearance of the lesions. He made a later investigation, after the lapse of another year, on the earlier cases which had been treated with sodium gynocardate, and found that those traced had remained well or showed further improvement, save in 5 cases which had relapsed. In passing, he mentioned that he had worked out some figures which showed that leprosy had its beginning mainly in the first two decades of life; in 65 per cent. of the cases the original infection must have started before the age of 20. The same liability to infection in early life characterized tuberculosis.

The work on tuberculosis had not gone very far. He and five other medical men in India had tried sodium morrhuate in tuberculous lesions, and five of the six after a year got results showing definite improvement. One experienced civil surgeon had treated 18 cases of tuberculous glands of the neck, and in every case had brought about their disappearance, though in one case there was relapse. The speaker had treated one case of lupus with a new preparation—mercury morrhuate—rubbed in locally, and the case cleared up, and three similar cases by other observers were reported. The treatment promised better for chronic local tuberculosis than for pulmonary tuberculosis. Sodium gynocardate had been shown by some workers to have an action on acid-fast bacilli and sodium morrhuate to have no action, but even if sodium morrhuate had no action *in vitro*, undoubtedly in the human body it induced febrile reactions with breaking down of the bacillus. He thought that the success attending sodium morrhuate in lupus was hopeful, but he would not advise its use in pulmonary tuberculosis except by experts under carefully controlled conditions.

Dr. SHAW MACKENZIE suggested that lipoids would be of considerable use, and in tuberculosis preparations of the bacillus itself should yield fruitful results.

Sir LEONARD ROGERS replied that he had not used lipoids; he had all along preferred to use something foreign to the tissues—a substance not normally present in them—to one which could be isolated therefrom.

Kaolin in the Treatment of Cholera.

Dr. R. R. WALKER read a paper on "The action and uses of kaolin in the treatment of Asiatic cholera." He said that when hypertonic saline—as recommended by Sir Leonard Rogers—was used, the mortality was 22 per cent., and convalescents were discharged on the eighth day. With kaolin and hypertonic saline, the mortality was 29 per cent., and convalescents were discharged on the sixth day. In all the cases rectal lavage with kaolin solution was carried out. He found the combined treatment with kaolin and hypertonic saline was not as successful as that with kaolin alone. The latter brought about calm sleep, early cessation of the suppression of urine, and absence of relapses. He detailed the bacteriological and chemical researches he had undertaken, and demonstrated that the lethal alkaline fluid which resulted from the activity of the vibrio was rendered innocuous by mixture with kaolin. He expressed a wish that the substance should be tried in typhoid.

Sir LEONARD ROGERS pointed out that in order to get reliable statistics cases should be taken uniformly through a whole epidemic, as it was well known that towards the end of an outbreak the mortality was only half what it was at the beginning. With the hypertonic saline treatment he had had 20 cases without a death, but following such a series he might have one or two fatalities. He said it would be interesting to test the effect of injecting the toxic fluid and the kaolin together, for such a mixture would approximate to the conditions in the intestine when kaolin was injected. He agreed that the treatment now set out was worthy of further trial.

PLAGUE ON SHIPBOARD.

AT the meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine held on April 10th, Dr. W. M. WILLOUGHBY, medical officer of the Port of London, read a paper on plague on shipboard. His chief point was to indicate the danger of the storeroom and its vicinity in relation to the origin and spread of plague from rat infection. He analysed the conditions obtaining in eight ships which, during the period 1917–20, came into the Port of London with cases of plague on board. In these eight ships, with a total complement of 1,715 persons, there were thirty-nine cases of plague. In five of the eight outbreaks the first person to be attacked was the storekeeper, and in three of these five the assistant storekeeper was also attacked. In other cases lascars, who were the first to be attacked, had been concerned with the issue of stores. Dr. Willoughby showed plans of the ships, indicating the position of the storeroom in relation to the berth of the men infected, and also the situation of the lavatory, which was an important consideration, because, if there was rat infection on board, the vicinity of the water supply was always a danger zone. Every hold of one of the ships contained rats which had died of plague, but the storeroom was the only focus of the human infection. It was possible for rat infection to exist for a long time without giving rise to human infection until some disturbance of the rat community took place. The first case of human plague occurred on one of the ships thirty-five days after leaving Bombay; this ship had called at Marseilles, where it was fumigated, and the human infection occurred subsequently. The rat infection had probably been simmering in the hold for weeks, but the fumigation, by interfering with the rats, precipitated the human infection. It was very important while fumigation of a ship was in progress that an effective rat hunt should be instituted on deck. By searching with canes in every possible recess he had caused to be captured nearly fifty rats on the deck of a ship after all the holds had been closed up. The disturbance of infected rats by cargo discharge was similarly dangerous, first to the ship's complement and then to the people at the port of discharge. In examining the history of any occurrence of plague on shipboard it was not sufficient to take into account the homeward voyage only, but the outward voyage should also be borne in mind, and perhaps even the previous voyage. The number of rats appeared to have no particular relation to the extent of the outbreak. The known rat history of one of the infected vessels only included 28 rats; in other cases, where the infection was no greater, the rats were numbered by the hundred.

In the course of a brief discussion, Dr. W. D. BETENSON, assistant medical officer of the Port of London, said that the cat history of one or two of the infected vessels was interesting. More than one of the animals—who were the pets of the storekeeper—had glandular swellings of the neck, but on the cats being killed, bacteriologists failed to find plague, although there were suspicious signs; it was a question whether cats, and also dogs, had not a certain degree of immunity which defeated the bacteriologist.

Dr. WILLOUGHBY, in replying on the discussion, gave some account of the steps taken in the Port of London to deal with suspected ships or ships from an infected port. Every parcel or box as it went over the side was watched, and if it was a well-packed bale or an unholed box, which could contain no rat, it went on to its destination. But more difficult cargo, such as feathers, was put in a rat-proof storehouse for fourteen days. The passengers went ashore under a system of surveillance, whereby every name and address was taken and a notification sent to the medical officer of health for the district in which they intended to reside. In 85 per cent. of the cases the addresses so given were trustworthy. Answering another question, he said that in the tideway of the Thames, if a ship was four hundred yards out, a rat could have small chance of swimming ashore, but in slack water the case was different, and there a matter of another hundred yards might be important.

THE BLOOD GROUP IN MOTHER AND CHILD.

A MEETING of the Pathological Section of the Liverpool Medical Institution was held on April 14th, with the President, Dr. J. E. GEMMELL, in the chair, when Dr. FRANCIS B. CHAVASSE read a paper on "The blood group in infants and their mothers." He stated that a series of experiments upon this subject in the summer of 1919 showed that the blood group was determinable at birth by macroscopic test of the infant blood against stock serums. The incidence of the four blood groups in the newly born was identical with their incidence in adults. The rapid macroscopic test for the blood group yielded incidences of the various groups which were identical with the incidences obtained by more complicated methods; it might therefore be regarded as an accurate test (both for adults and infants). The blood group of the infant frequently differed from that of its mother, and twins might differ in this respect both from each other and from the mother. Where by reason of a difference in the blood group a condition which might be termed "maternal threat" to the child arose, the child's blood was invariably agglutinated by the serum of its own mother. But while the agglutinophilic receptors of the infant's corpuscles were thus invariably present at birth and enabled the blood group to be identified, the agglutinins themselves which were appropriate to the group thus identified were fully developed at birth in about 30 per cent. of cases, so that in cases of "foetal threat" to the mother the infant's serum agglutinated the blood of the mother (and of the other individuals of the mother's group) in 30 per cent. of such cases only. There was no obvious relationship between maternal threat and sterility or between foetal threat and eclampsia and the toxaemias of pregnancy. The fact, however, that agglutination *in vitro* was invariable in the former case and common in the latter showed that no immunity was acquired, the protective mechanism *in vivo* being referable therefore to the fact that dialysis of agglutinins via the placenta was not permitted by the intervening cells, at all events during life. The incidence of the blood group in lying-in women was identical with the normal adult incidence, nor was there any relation between the relative blood group of mother and child on the one hand and the sex of the child on the other. The transfusion of maternal blood into her infant as performed in cases of melaena neonatorum ought not to take place unless it had been previously demonstrated that both mother and child belonged to the same blood group. If they differed, as they did in one-third of all cases, another donor should be selected. The apparatus (made by Hawkesley) used in these experiments for performing the macroscopic test for the blood group was shown.

Professor E. E. GLYNN gave a demonstration of mechanical apparatus for use in the Wassermann reaction.

CAESAREAN SECTION.

AT a meeting of the Royal Medico-Chirurgical Society of Glasgow, on April 1st, Dr. JAMES H. MARTIN made a communication on a series of fifty consecutive Caesarean sections without fatality. Dr. Martin, in describing his technique at length, said it was a modification of that introduced by Professor Murdoch Cameron. His incisions were made about an inch and a half to the right of the middle line, two-thirds being above the level of the umbilicus. This utilization of the rectus and its sheath prevented subsequent hernia. There was the further advantage that as a rule this abdominal incision brought the operator right down on the middle line of the uterus. In making the uterine incision Dr. Martin always used a metal pessary, oval in shape and slightly concave, as suggested by Professor Cameron. In removing the placenta and membranes he turned the uterus inside out. Thus the uterine arteries were kinked and the loss of blood was infinitesimal. The wall of the cavity of the uterus was now rubbed thoroughly with gauze, which might be termed a curettage. The difficulty in removing the membranes in the region of the os was lessened by sweeping the finger round beyond the internal os while the patient was being prepared for operation. In suturing the uterine wound the lowest suture was inserted and tied before the uterus was turned inside-in again, and this seemed to lessen the haemorrhage while the other sutures were being inserted and tied, particularly if the uterine arteries were not well compressed. The sutures were of silk, and interrupted. If the patient was not sterilized, mattress sutures of catgut were usually inserted along the uterine incision, the peritoneum and to some degree the superficial muscle being included in these mattress sutures. The peritoneum and posterior sheath of the rectus muscle were sutured together with a fine continuous catgut suture, and five or six silkworm gut sutures were inserted through the skin and the anterior sheath of the rectus, but not tied. The anterior sheath of the rectus muscle was now sutured with a continuous catgut suture, and the skin approximated by another similar suture. After cleansing the wound and the surrounding skin, a gauze pad was applied and anchored by tying the five or six silkworm gut sutures referred to above. Gamgee tissue was applied and fixed with six-inch bandages. After the operation the patient was propped up in the sitting posture before being completely out of the anaesthetic. The advantage of this posture was that the lochia when shed flowed through the cervical canal into the vagina, and on to the pad, and was not retained in the uterus. Further, micturition and defaecation were not difficult in this position. With these modifications Dr. Martin had performed fifty consecutive Caesarean sections without fatality to mother or child.

AT a meeting of the London Association of the Medical Women's Federation on April 12th, with Lady BARRETT in the chair, Dr. JANE WALKER read a paper on "Tuberculosis in children of school age." She said that great difference of opinion still prevailed as to when tuberculosis was acquired, but most people agreed that it was usually acquired in childhood, though its exact prevalence was still unknown, and percentages of incidence given by different competent authorities varied from 2 in 300 to 15 per cent. Her statistics showed that out of 800 children treated at the East Anglian Sanatorium, 1.5 per cent. gave a history of haemoptysis at the onset, and 20 per cent. a history of cough. A small number dated the onset from an attack of whooping-cough, and a still smaller number from measles. Usually the onset was insidious, with malaise or, more rarely, loss of flesh. The fact that a child came from a home where there was definite tuberculous disease apparently did not make its prospects any worse. Infection by contact appeared to be a far more important factor than infection due to hereditary predisposition. Where tubercle bacilli were present in the sputum the seriousness of the case was enormously increased in children, but the results of treatment in cases where tubercle bacilli did not occur in sputum were very good. Dr. Walker pointed out the importance of training the medical profession in the recognition of early signs of the disease, and suggested that a linking up of hospitals and tuberculosis dispensaries would be of much value to this end. A keen discussion followed

the paper, in which Dr. R. GORDON, Dr. KING, Mrs. HOGARTH, Dr. FLORA SHEPPARD, Dr. MARY GORDON, and Dr. PARSONS took part.

A MEETING of the Manchester Medical Society was held in the Library of the Medical School on April 6th. The President, Dr. GOODFELLOW, was in the chair, and about sixty members were present. Dr. GOODFELLOW gave his presidential address, entitled, "Some aspects of preventive medicine." After giving a short historical account of the rise and present position of preventive medicine, he referred to the wide field still open for work in this direction and drew especial attention to the unsatisfactory position in this country of puerperal mortality, and to the need for increased knowledge in subjects such as infant welfare, health during the "pre-school" period, disorders of the heart, and tuberculosis. He emphasized the existing difficulties associated with the supply of pure milk and briefly discussed some methods of dealing therewith. After pointing out the essential factors in the organization of modern methods of preventive medicine, he urged the establishment of greater facilities for post-graduate study and for research work, emphasizing particularly the necessity for a large increase in resident institutional posts. With reference to administrative machinery Dr. Goodfellow put in a strong plea for the establishment of new local health authorities constituted *ad hoc*.

Reviews.

ORTHOPAEDIC SURGERY.

SURGEONS generally, and orthopaedic surgeons in particular, will welcome the publication of *Orthopaedic Surgery of Injuries*,[1] edited by Sir ROBERT JONES. It seems a pity that this very important work could not have been published earlier, for the two volumes comprise a number of articles written by a variety of workers in the special surgical military hospitals, and embody the results of their experience during and since the war. Though injuries resulting from war wounds rather dominate the pages, the accidents common both to the soldier and the civilian are by no means neglected. The influence of the editor's teaching is evident in almost every page, but the writers of the various chapters have been given a free hand to express their personal views. Some overlapping must, we suppose, be inevitable in such a work, but the repetition of general considerations is rather apparent in the earlier chapters.

The first volume opens with an interesting article by Professor Keith on the principles and practice of H. O. Thomas, whose work is rightly considered to have had an immense influence on the later development of orthopaedic surgery. This is followed by a chapter on "Prevention of Deformity," which is sound enough on shock and sepsis as experienced among the recently wounded.

Lieut.-Colonel Joel E. Goldthwait, whose work is so well known in this country, contributes a chapter on the principles of orthopaedic surgery as they apply to the military need. In it he points out how much can be done to increase the number of efficients available for a fighting force by careful attention to posture and the care of the feet in the early stages of a recruit's training.

The bulk of the first volume is devoted to injuries of the bones and joints. Simple fractures are dealt with in an excellent article by Mr. W. H. Trethowan, which, however, would be much improved by illustrations, in which it is entirely lacking. The splinting of war fractures is dealt with by Captain H. G. Carlisle in an extremely well illustrated article. The choice of Mr. E. W. Hey Groves to write the chapter on ununited fractures is particularly happy; in it the causes of delayed union and non-union are fully discussed, as well as the principles involved in the operative treatment of fractures. It is of interest to note that light work is recommended early (five to six weeks) after bone graft operations, provided that the graft has been firmly fixed by splint pins or other metal fastening. Sir Robert Jones's chapter on malunion of the femur is, it need hardly be said, full of sound advice; while Mr. R. C. Elmslie on chronic osteomyelitis is equally sound. Mr. Naughton Dunn and Mr. S. W. Daw write a thoroughly good chapter on disabilities of joints above the wrist. On the vexed question of the best position for ankylosis of the forearm there is some difference of opinion among the writers in this book. Dunn and Daw recommend the mid-position—that is, midway between full pronation and full supination, with a few degrees of pronation in a clerk's right forearm; later on Sir Robert Jones advises the mid-position, and Mr. W. I. Baldwin (Lieutenant-Colonel U.S.A.), in the next chapter, advises 35 degrees of pronation from the mid-position. The last position would certainly be considered too extreme by most surgeons, whatever their opinions as to the best position. It is apt to be forgotten that many, probably most, men, when seated at an ordinary table in a chair of moderate height, write with the forearm in a position of slight supination. The lower the chair the greater the supination. Moreover, by elevation of the elbow and internal rotation of the arm, lack of pronation can be compensated for, while no contortion can make up for lack of supination.

A carefully written article on the knee-joint is contributed by Mr. S. Alwyn Smith; in it internal derangement of the knee, including injuries of the crucial ligaments, are very fully discussed. Ankylosis and stiff joints generally are dealt with by the master himself, Sir Robert Jones. The chapter is full of useful tips and suggestions drawn from the writer's vast experience, though, as usual, he refers often and generously to the work of others. The same may be said of his chapter on flail joints. Mr. R. C. Elmslie contributes a relatively brief chapter on amputations and artificial limbs, and Sir J. Lynn-Thomas follows with a most interesting account of the centre for the limbless at Cardiff. Dr. F. C. Kidner, an American writer, deals with disturbances of the lumbar spine and pelvic girdle. In this excellent volume the hip is the only joint which does not perhaps receive all the attention it deserves.

The second volume is largely devoted to the injuries of the peripheral nerves. Every possible aspect of the problems involved is adequately dealt with in a series of excellent chapters. The illustrations in this volume are admirable. The anatomy is dealt with by the late Professor A. M. Paterson, diagnosis by Dr. T. Grainger Stewart and Dr. Rowley Bristow, and prognosis by Dr. E. Farquhar Buzzard; Sir Harold Stiles has written a chapter on the operative treatment, which is admirably clear and should be of the greatest service to the young surgeon. The illustrations of this chapter are partly coloured and are reproductions of drawings made during the course of actual operations. Mr. Rowley Bristow gives clear directions as to the post-operative treatment, and also, in a later chapter, details the requirements of an electrical department. The end-results of operations are dealt with by Captain C. Beresford Alexander, of Alder Hey, and Miss M. Forrester Brown, M.S., M.D., of Bangour Special Military Hospital.

The problems that arise when all hope of recovery of function after a nerve lesion has been abandoned are discussed by Mr. T. P. McMurray. Opinions differ widely as to the best muscles to select for tendon transplantation—in a case of musculo-spiral paralysis, for instance. It is, however, rather surprising to see that the radial flexor of the wrist, and not the ulnar flexor, is selected for attachment to the long extensor tendon of the thumb. His contention that the thumb and index finger work together and are therefore best moved by the same transplanted muscle, can, for the most part at any rate, be fulfilled by inserting the flexor carpi ulnaris into both—as well as into the tendons to the other fingers—the radialis tendon being fixed to the two remaining tendons of the thumb; this plan seems to be preferable when considered with regard to the line of action of the transplanted tendon. He rightly insists on the importance of suturing a transplanted tendon with sufficient tension to avoid leaving any slack to be taken up by the muscle when it contracts, and advises "slight tension." Many surgeons would go further and advise "considerable tension." Most readers will wonder why the next two short chapters, admirable though they are, on injuries of the head and spine respectively, are inserted at all. Written by Dr. E. Farquhar Buzzard and Mr. Percy Sargent, they deal with the diagnosis and treatment rather than with any early or late results which might concern the orthopaedic surgeon.

[1] *Orthopaedic Surgery of Injuries.* By Various Authors. Edited by Sir Robert Jones, K.B.E., C.B., F.R.C.S. London: H. Frowde, and Hodder and Stoughton. 1921. In two volumes. (Roy. 8vo; vol. i, pp. 555, 206 figures; vol. ii, pp. 700, 268 figures. £4 4s. net two volumes.)

Functional and reflex disabilities, by Drs. Burrows and Morton, and trick movements by Professor F. Wood Jones, are the subjects of the next two articles; both are well illustrated. As many know, Professor Wood Jones, armed with his great knowledge of anatomy, has made a careful study of the muscles a patient may call into action in his efforts to imitate a movement that is normally produced by one or more of his paralysed muscles. He has collected a beautiful set of photographs.

The succeeding chapters deal with splints and plaster (Dr. D. McCrae Aitken), plain metal splints (Mr. R. Lane Joynt), massage (Dr. J. B. Mennell), the Ling system of exercises (Dr. G. Murray Levick), hydrotherapy (Dr. R. F. Fox), and *x*-ray work (Mr. C. Thurstan Holland). Finally, H.M. King Manuel, who gave so much of his time during the war to the organization and equipment of curative workshops, contributes an article on this subject, while the last chapter is written by Lieut.-Colonel Walter de M. Hill, on the organization and administration of a military orthopaedic hospital.

Some of the chapters in this volume are not, perhaps, quite up to the high standard of the rest, but the few faults to be found do not seriously detract from the excellence of the work as a whole. An enormous amount of useful information is contained in it, and every surgeon will undoubtedly turn to it for guidance in the classes of cases with which it deals. The illustrations on the whole are excellent. The editor and publishers are to be congratulated on the production of an epoch-making work.

THE INSTITUTES OF MEDICINE.

PROFESSOR J. J. R. MACLEOD and his collaborators in their admirable work on *Physiology and Biochemistry in Modern Medicine*[2] have achieved well-deserved success. It is a great tribute both to the authors and the medical profession that so large and expensive a book should have reached a third edition in the space of three years; it is a most cheering augury for the future.

Although all sections are not equally good and although no one would pretend to be in whole-hearted agreement with every line in the book, it gives a very fair and a very sane account of applied physiology and biochemistry, and it fills the place it was designed to take as "an advanced textbook in physiology for those about to enter upon their clinical instruction." It will be of even greater value as a reference book for those of more mature clinical experience who desire to understand the physiological facts underlying pathological conditions. After all, physiology and biochemistry are the basis of all true medical practice—of the interpretation of symptoms as well as the application of therapeutic agents. The study of the heart and the circulation and the factors which influence them is physiology pure and simple. In the laboratory the technique may be difficult and complicated, but the results obtained are more or less readily interpreted and, if necessary, new and drastic lines of experiment may be devised to elucidate the problem. At the bedside the methods available are strictly limited, the investigator is confined to one or two simple lines of experiment, and the interpretation is correspondingly more difficult. Careful and repeated observations on the patient based on sound physiology, such as is given in this book, will greatly help towards the solution of many of the outstanding problems. *Experientia docet*—provided we know what to look for. The modern clinician is, indeed, to be congratulated in having this work as his guide.

The changes made in the present edition are numerous, but they do not essentially alter the character of the book. The section on the nervous system has been recast and rewritten, and the chapters on respiration have been rearranged, the much discussed subject of anoxaemia being dealt with in some detail with special reference to its clinical aspects. Other sections of the book, such as those dealing with the endocrine organs, accessory food substances, ventilation, etc., contain much new matter.

The publishers are again to be congratulated on the get-up of the book.

[2] *Physiology and Biochemistry in Modern Medicine.* By J. J. R. Macleod, M.B., and others. Third edition. London: H. Kimpton. 1920. (Roy. 8vo, pp. 1024; 243 figures. 42s. net.)

DIATHERMY.

IN *Diathermy, its Production and Uses in Medicine and Surgery*,[3] Dr. CUMBERBATCH, the medical officer in charge of the Electrical Department of St. Bartholomew's Hospital, has produced a volume which traces the history of the subject from the time when the late Dr. Lewis Jones introduced the method into England in 1909. Nagelschmidt demonstrated its use on three surgical cases in St. Bartholomew's Hospital in October, 1910. One of these was a case of enlarged tonsils, in which diathermy was used to remove one and the guillotine the other; the contrast between a bloodless operation and the reverse was striking.

After an introduction and a historical note Dr. Cumberbatch deals, in the first place, with the principles on which high-frequency currents are produced; the next chapter is devoted to a description of various models of diathermy machines. Many diagrams illustrate this portion and make the letterpress clear to the reader. A short but practical note on the care of the apparatus follows. The physiological effects of diathermy are next discussed, with especial reference to arterial blood pressure, the pulse rate and the respiratory exchange. An interesting chapter is that describing some original experiments on the living subject in order to ascertain the effect of diathermy on temperature.

The main portion of the book consists of two parts, the first dealing with the medical, and the second with the surgical applications of diathermy; both are illustrated by photographs of cases before and after treatment, by diagrams of various kinds of electrodes, and by photographs of tissues which have been treated. The methods to be adopted in applying the current for medical purposes are accurately described; the electrodes, their application and situation, the regulation of the strength of the current, and the condenser couch all come under review. Sections follow dealing with the maladies for which this treatment is suitable, and indicating the methods to be used for each condition. Thus sciatica, neuritis, arterio-sclerosis, metatarsalgia, paralysis agitans, and so on, are all dealt with under separate headings. The chapter on the uses of diathermy in surgery commences with a description of the local effects produced by "diathermic coagulation," and a discussion of the actions of different methods of cauterization. The important point is that diathermy raises the temperature of a part till its coagulation occurs *in situ*; the blood and lymph are coagulated and the vessels sealed, whilst infective organisms are destroyed. The essential points of many cases of malignant disease are narrated, and the method employed, dangers to be avoided, and the results obtained, described; cases illustrating the complications which may occur are reported.

The author has produced a book which is a valuable addition to the literature of his subject. It has the advantage of being based almost entirely upon his own work and experience, and sets out very fully the scope of diathermy both in medicine and surgery. Its general construction, the meticulous care for detail, the easy style in which it is written, together with its comprehensive character, should ensure its success as a textbook. Those who practise this treatment should read it carefully, and keep it at hand for reference.

CLINICAL MICROBIOLOGY.

A NEW edition of BEZANÇON'S[4] well-known work on clinical microbiology will be welcomed by those who desire to improve their bacteriological methods, and especially by those who look to France for guidance and help in such matters. The ingenuity and originality of the French is always refreshing, and those who desire a synopsis of recent developments will not be disappointed in the present book.

As a preface Bezançon reproduces an inaugural lecture given by him in Paris in March, 1919, wherein he outlines the progress of bacteriology during recent years, and traces the stages by which it has developed from the

[3] *Diathermy, its Production and Uses in Medicine and Surgery.* By Elkin P. Cumberbatch, M.A., B.M., M.R.C.P. London: William Heinemann (Medical Books), Ltd. 1921. (Demy 8vo, pp. 203; 44 figures. 21s. net.)

[4] *Précis de Microbiologie Clinique.* By F. Bezançon. Third edition. Paris: Masson et Cie. 1920. (Post 8vo, pp. 931; 7 plates, 200 figures. Limp covers, 30 fr. net; boards, 35 fr. net.)

simple examination of a film or culture, or an animal inoculation, until it has come to touch upon some of the most delicate problems in physiology. He ends by emphasizing the need of constant daily co-operation between physician and bacteriologist in order to interpret the phenomena observed by each.

The book is divided into five portions. Part I deals with the general characters of bacteria, and also includes a synopsis of current knowledge of immunity. Part II is devoted to technique, including the preparation of culture media, special culture methods, methods of isolating bacteria in pure culture, and methods of estimating the various antibodies. In Part III the pathogenic bacteria are described in turn. Part IV is devoted to a description of the bacteria of the normal human body; and Part V deals with the bacteriological analysis of blood, sputum, urine and pus, including the examination of water and air.

The scope of the book is wide, and it is not surprising that the author takes nearly 900 pages to cover the ground. It is practically impossible for one man to maintain a uniform standard of excellence in all the fields here attempted, and perhaps the chief merit of the present work is to be found in the account of particular infections such as sporotrichosis and spirochaetal jaundice, which are both dealt with in considerable detail and with much success. It is surprising to find no reference to the work of the Lister or the Rockefeller observers on the serological types of pneumococcus, to the work of Tulloch on the types of tetanus, or to the apparatus of McIntosh and Fildes for the culture of anaerobes. It would seem that there is considerable scope for someone who will undertake to evangelize the French with regard to British work! But if the present book ignores the contributions of British workers, these can be studied elsewhere. The chief merit of Bezançon's monograph lies in the fact that it is a compendium of current French methods and views on a subject of growing complexity and importance.

MANIC-DEPRESSIVE INSANITY.

THE volume entitled *Manic-Depressive Insanity and Paranoia*[5] is a translation from the eighth German edition of Professor EMIL KRAEPELIN'S *Lehrbuch fur Psychiatrie.* Miss MARY BARCLAY, who is responsible for rendering this book into English, has already translated *Dementia Praecox and Paraphrenia*, by the same author, so that the most important clinical publications of the celebrated German psychiatrist are now accessible to the English reader. The conception of manic-depressive insanity as a separate morbid entity has been evolved entirely upon a basis of symptoms and outcome, and Professor Kraepelin is unable to throw any light on the nature of the disease. In view of the great amount of research which has been devoted to this and other forms of mental disorder at the Munich clinic, it is somewhat disconcerting to read that we are still in a state of complete uncertainty as to the meaning and significance of the symptoms they exhibit. In respect to manic-depressive insanity the principal causal factor is to be found in a morbid predisposition, and an hereditary taint was demonstrated in about 80 per cent. of the Heidelberg series of cases.

The description of symptoms and the delineations of the various forms which this disorder assumes alone render this book worthy of the most careful study, but many psychiatrists will be inclined to doubt how far it is justifiable to regard this type of morbid reaction as a definite disease entity. There can be no disputing the fact that this conception is a most convenient clinical generalization in so far as it serves to bring a number of cases with certain symptoms in common under one heading. While, however, the recognition of these symptoms in a given case has undoubtedly a certain prognostic value, so many atypical cases are met with in actual practice that the diagnosis between dementia praecox, manic-depressive insanity and other forms of disorder is often a matter of extreme difficulty. It is almost true to say that if a case gets well we call it manic-depressive insanity, and if not, dementia praecox. Especially is this the case in the hallucinatory and mixed forms of manic-depressive insanity to which Professor Kraepelin devotes so much attention in his book. It is probable that many who read the life-like descriptions of the four forms of disorder included in these two volumes will be inclined to feel that they shade so imperceptibly into one another that no definite boundary lines can be drawn between them. In the future we shall perhaps tend to take a much wider biological, dynamic view of the psychoses, and in this way obtain a much greater insight into and understanding of the significance and meaning of mental disorder. Professor George M. Robertson seems to imply some such view in his brief editorial preface to this volume. We agree with him also when he writes that the medical profession is under a debt of gratitude to Dr. Mary Barclay for her faithful rendering into English of these classical studies.

[5] *Manic-Depressive Insanity and Parancia.* By Professor Emil Kraepelin, of Munich. Translated by R. Mary Barclay, M.A., M.B. Edited by George M. Robertson, M.D., F.R.C.P.Edin. Edinburgh: E. and S. Livingstone. 1921. (Demy 8vo, pp. xv+280; 49 figures. 21s. net.)

NOTES ON BOOKS.

WE had occasion not long ago to review the first edition of Dr. GUILLAUME'S work on the sympathetic nervous system.[6] That a second edition has so soon been called for is sufficient testimony to its interest and value. Much new material has been embodied, particularly in the sections dealing with the morphology and physiology. Fresh chapters deal more completely with the clinical and pathological aspects as well as with diagnosis. A full and excellent bibliography is added. In its enlarged form this book should find a wide circle of readers, constituting as it does a comprehensive survey of a subject which is now attracting so much study and attention.

Under the title of *The Story of the Horton (Co. of London) War Hospital: Epsom*,[7] Lieut.-Colonel J. R. LORD, C.B.E., M.B., has published an account of the history of the transformation of the civil institution now known as the Horton Mental Hospital into a very different form of activity, which is very interesting, and the immense amount of labour and the fertility of the schemes which it entailed reflect great credit on Dr. Lord and his colleagues. In addition to the general history of the hospital during the war there are chapters giving an account of the detailed work of the special sections of the hospital. In the section on the mental department of the hospital there are some interesting conclusions by Dr. Lord, who, although his time was fully taken up with administration duties as officer commanding, naturally had a considerable interest in war psychiatry. He considers that the war did not occasion any new form of mental disorder, and that in cases of mental breakdown there was probably a predisposition not to all, but to one of the generally recognized forms of mental disease, excluding, of course, definite brain lesions. The form the individual is predisposed to is settled by constitution, conditions of early life—pre- and post-natal—adolescence, early sex and emotional experience, and education. The stress of war would appear to have been more potent in hurrying on mental symptoms, causing them to appear at an earlier stage in the development of the predisposition than ordinary civil causes of mental breakdown would have effected. Dr. Lord must be congratulated not only on the interesting volume which he has produced, but on the valuable work which, in face of many difficulties, he and his hospital achieved during the war.

Of the bound volumes of Transactions that have come to us recently for review one is published in this country and two in the United States. The forty-third volume of the *Transactions of the Medical Society of London*[8] records the scientific proceedings of that Society during its 147th session. The longest contributions are the three Lettsomian Lectures by Dr. Herbert Spencer "On Tumours Complicating Pregnancy, Labour, and the Puerperium," which were printed a year ago in our own columns; the Annual Oration by Sir D'Arcy Power on "The Rev. John Ward and Medicine"; and the Presidential Address by Mr. V. Warren Low "On Surgery during the War."

The forty-fourth volume of *Transactions of the American Gynecological Society*[9] is in large part devoted to a

[6] *Le Sympathique et les Systémes Associés.* By A. C. Guillaume. Preface by Professor Pierre Marie. Second edition. Paris: Masson et Cie. 1921. (Demy 8vo, pp. 419; 40 figures. 18 francs net.)

[7] *The Story of the Horton (Co. of London) War Hospital: Epsom.* By Lieut.-Colonel J. R. Lord, C.B.E., M.B. London: W. Heinemann (Medical Books), Ltd. 1920. (Demy 8vo, pp. 264; 7 plates, 1 plan. 12s. 6d. net.)

[8] *Transactions of the Medical Society of London.* Forty-third volume. Edited by Donald Armour, C.M.G., F.R.C.S., and William Henry Willcox, C.B., C.M.G., M.D., F.R.C.P. London: Printed for the Society by Harrison and Sons. 1920. (Demy 8vo, pp. 343; illustrated.)

[9] *Transactions of the American Gynecological Society.* Volume 44, for the year 1919. Edited by George Gray Ward, jun., M.D. Philadelphia: Wm. J. Dornan. 1919. (Demy 8vo, pp. 427; illustrated.)

record of the proceedings of the annual meeting held in the summer of 1919 at Atlantic City, under the presidency of Dr. Franklin H. Martin of Chicago, whose introductory address on "Gynecology as a Specialty" forms the first item. The discussion on radium treatment of uterine cancer which took place in the previous year at Philadelphia, was resumed by Dr. Harold Bailey of New York, whose paper is freely illustrated. In his conclusions Dr. Bailey stated that "so great has been the palliation from the radium that it may be said that no uterine cancer case receives proper treatment without thorough radiation of the tissues of the pelvis."

The thirty-second volume of *Transactions of the American Pediatric Society*[10] contains the papers read during the annual meeting at Highland Park, Illinois, last summer under the presidency of Dr. Thomas S. Southworth of New York, who in his opening address argued in favour of the segregation of cases of pneumonia. An interesting paper on the food requirements of children, estimated in calories, was contributed by Dr. L. Emmett Holt in conjunction with Miss Helen L. Fales. They maintain that the total daily calorie requirement of children of either sex during adolescence exceeds by nearly 1,000 calories the requirements of the adult man or woman of moderate activity.

Messrs. H. K. Lewis and Co., Ltd., have just published a Supplement (1918–20) to the Catalogue of their Medical and Scientific Library,[11] with a list of additions to March, 1921.

[10] *Transactions of the American Pediatric Society.* Volume 32. Thirty-second Session. Edited by Oscar M. Schloss, M.D. (Demy 8vo, pp. 367; illustrated.)

[11] *Supplement (1918–20) to the Catalogue of Lewis's Medical and Scientific Circulating Library.* London: H. K. Lewis and Co., Ltd. 1921. (Demy 8vo, pp. 65. 1s. net.)

APPLIANCES AND PREPARATIONS.

A Direct Record Scotometer.

MR. N. BISHOP HARMAN, F.R.C.S. (London), writes: In recent years much attention has been paid to the mapping out of the central fields of vision. The chief difficulties in this kind of perimetry have been due to the slowness of the means of taking the observations, so that the patient got tired, vitiating the results; and, secondly, there was no satisfactory means of making a direct and permanent record of the observations. For the past two years I have been using an instrument which overcomes these difficulties. It consists of a rigid iron stand to which is fitted a frame carrying the screen against which the observations are to be made. The screen is of grey cloth, fixed into it in the central position is a small white metal stud; this is the fixation point. Behind the screen is a sheet of carbon and a paper chart ruled into the usual degree circles and radii. Red and blue tracing papers are also supplied, which enable three records to be taken, at intervals, on the same chart. The object is carried on a suitable object-holder and held in the surgeon's hand, which is obscured from the patient's view by a grey cloth bag-glove. At the back of the frame knobs are fixed in the usual positions of the blind spots, so that the surgeon has a reliable guide from which to work. In taking observations the patient's face at the naso-buccal groove is pressed against the knob on the free upright of the stand. One eye is covered, the other looks at the fixation spot. The surgeon moves the object over those parts of the field he desires, and notes when the patient sees it and when he does not. The records of the observations are made by pressing the small style on the back of the object holder against the screen, when the impress is conveyed by the carbon sheet to the chart. The whole of the movements of the object over the screen may be traced in this fashion by a light continuous pressure, and salient points marked by deeper pressure. The method is so simple that the surgeon has no need to watch his own movements, so can concentrate his attention on his patient's face and secure that his fixation is constant. The real advantage of this recording instrument is the speed and accuracy with which observations may be made. The instrument has been made for me by Messrs. John Weiss and Son, Ltd., of 287, Oxford Street, London, W.1.

A Urethral Drainage Bougie.

DR. HENRY DUTCH (London, W.) writes: The treatment of gonorrhoea, as practised by the Australian medical officers at Codford Camp, was described in the BRITISH MEDICAL JOURNAL of March 1st, 1919, p. 245, by Major Fogarty, M.C. Believing the method to be sound, but crude and painful in its application, I have had made for me a drainage bougie of the following character. It is simply a tubular mesh of white silk closed at one end, through the centre of which runs a thin vegetable fibre. Its length is about 8 in.; the central core, being several inches longer and being flexible, allows easy insertion. The urethra having been cleared by urination, a sterilized urethroscope tube with a pilot is introduced. The pilot is then withdrawn and the drainage bougie, saturated with any desired solution, such as permanganate of potash, protargol, acriflavine, is introduced. The urethroscopic tube is now withdrawn, leaving the drain *in situ*. Finally, the central core is pulled out, leaving the drainage tube in the urethra. The drain gives no discomfort and is well tolerated. The advantage of this method is that all parts of the mucous lining come into contact with the antiseptic employed, and there is no risk, as in syringing, of driving the pus into the posterior urethra, which I believe is a common cause of cystitis, prostatitis, and orchitis. This method might also be employed for the drainage of small sinuses, fistulae, etc. The silk bougies, and a glass introducer, have been made for me by the Aurorascope Company, Ltd., Fulwood House, Fulwood Place, Holborn, W.C.1.

TUMOUR OF THE BLADDER AMONG WORKERS IN ANILINE FACTORIES.

AMONG the duties imposed on the International Labour Office, set up as part of the organization of the League of Nations, is the protection of the worker against sickness, disease and injury arising out of his employment. In order the better to carry out this duty, a special Industrial Hygiene Department has been formed and placed in the charge of Dr. Carozzi. It has recently produced a report in which a historical account is given of the observations by which a relation was established between the occurrence of tumour of the bladder and work in aniline factories, and the prophylactic precautions which have been taken, seemingly with success, are enumerated.

In 1895 Rehn published three cases of tumour of the bladder in workers in an aniline factory in Frankfort-on-Maine, and since that time a number of similar cases have been reported. The first cases occurred among workers engaged in the preparation of fuchsine and aniline. Inquiries were carried out in a number of factories over a series of years, but no definite conclusions were reached. In 1912 Leuenberger published 18 cases observed among the workers at Basle handling aniline dyes, and a commission was then appointed. The total number of cases reported to it was 177; it is questionable whether some of the cases should have been included. The figures given by Leuenberger of the frequency of this condition in Basle are very striking. From 1901 to 1910 the population of the city included approximately 56,500 male workers, and the number of workers employed in the aniline factories was 840. During that period six workers in aniline dyes died as a result of tumour of the bladder. During the same period there were twelve deaths from the same affection among the rest of the male population. Six cases of tumour of the bladder were observed at the surgical clinic at Basle from 1861 to 1900 before the development of the chemical industry; from 1901 to 1910, after the development of the chemical industry, 16 cases of tumour of the bladder were seen; 10 of these occurred in aniline workers and 2 in dyers.

A large proportion of the tumours noticed have been malignant. They appear especially after the age of 40, and particularly in individuals who have been working in contact with the materials for many years. A large number of products, either singly or in association with others, have been held responsible by various observers. All the suspected products, such as aniline, toluidine, naphthylamine, etc., are amino-compounds. Leuenberger enumerates the following as capable of provoking tumour growths: Safranine, dianisidine, dihydrothyoxiline, Congo red and benzo-purpurine. Benzidine and beta-naphthylamine are considered particularly dangerous.

Experience proves that, while there is no immunity, predisposition plays a great part. There are many factors that favour poisoning—lack of cleanliness, malnutrition, alcoholism, and excesses of every kind. Workers new to the trade, and consequently working without precaution, with whom large skin surfaces come in contact with the

poisonous products, are specially liable. On the other hand, workers remaining a long time in the workshops are more exposed to the danger of introducing by deglutition the products floating in the air. Although the permeability of the skin by the products in question is remarkable, older workers, who take great care of the skin, yield a smaller number of cases of poisoning.

The poisonous products enter the body by various routes—aniline, which is volatile, by the respiratory organs; others by the alimentary canal and the skin and mucous membranes. At present it is not possible to say exactly which is the toxic substance that produces the growth of these tumours. The tumours are met with almost anywhere in the bladder, most often on the inferior segment and near the neck. They are said to have been rarely seen below the ureteral orifice. Profuse and dangerous haematuria is a common symptom. Carcinoma is met with, either as a primary tumour infiltrating the bladder wall or as a secondary development following a papilloma. At an early stage the tumours are frequently acccompanied by cystitis and nephritis. Lymphatic metastases are found but visceral metastases are uncommon.

The provisional conclusions which the facts are considered to warrant are as follows:

1. There is a close connexion between the manipulation of certain amino-compound products and tumours of the bladder.
2. The number of cases of tumour of the bladder proved to have occurred among workers in contact with amino-compounds is small, and it must therefore be concluded that the individual factor plays a great part in the pathology of the disease.
3. Though no direct relation can be traced between their occurrence and the duration of employment, action of long duration is necessary to produce tumours of the bladder.
4. It is not possible to determine the substance capable of engendering tumours. It can only be said that the amino-compounds, and particularly benzidine and beta-naphthylamine are incriminated.
5. The same substance may produce either simple cystitis or benignant or malignant tumours.
6. Hygienic precautions, strictly applied for a few years, will ensure the diminution and even the disappearance of the disease.
7. It is therefore necessary in factories in which workers are exposed to the action of aromatic bases that hygienic precautions should be rigorously applied.
8. Meanwhile, it is desirable that the industries concerned should continue to carry on researches with a view to ascertaining the dangerous substance, and that the particulars of every case should be precisely recorded by a uniform method.

In the report now before us the importance of early diagnosis by cystoscopic examination is urged. Experience in Germany has shown that repeated cystoscopic examination in suspicious cases is welcomed by the workers when the danger of the disease is pointed out to them.

Kuchenbecker has elaborated a method of examining the urine to demonstrate the presence of amino-compounds; by the periodical examination of the urine of workers dealing with fuchsine, and particularly those preparing benzidine and naphthylamine the presence of the substances named has by this method been traced in large quantities among workers exposed to the inhalation of dust in the factories. The efficacy of the means of prevention adopted has been confirmed by such examination; the quantity of the products in the urine has been observed to diminish and even to disappear after their application.

The precautions taken in certain German factories producing amino-compounds during recent years are believed to have yielded good results. These may be summarized as follows:

Well-ventilated workrooms with extraction of vitiated air and introduction of fresh, and, if necessary, cooled air; rigorous cleanliness of floors and walls; absorption of dust.

Well-closed apparatus, including the apparatus for the mechanical transport of materials; local absorption of dusts and vapours.

Reducing working hours; adoption of shifts, in view of the fact that a very short stay in the incriminating section is sufficient to produce tumours.

Working clothes, always strictly clean, closed at the neck and wrists; gloves and shoes.

Daily bath; careful washing before going to the refectory or leaving the factory.

Medical examination of workers, both on engagement and periodically; selection of healthy workers; periodical instruction by the medical officer and director of the section. The periodical examination includes examination of urine as previously indicated.

Compulsory notification of haematuria and tumours of the bladder among workers in factories producing amino-compounds.

Routine cystoscopic examination in cases presenting suspicious symptoms.

In this country regulations have been in force since the end of 1908 laying down the precautions to be observed in the manufacture of certain nitro- and amido-derivatives of benzene and the manufacture of explosives. They apply to dinitrobenzol, dinitrotoluol, trinitrotoluol, paranitrochlorbenzol, aniline oil and aniline hydrochloride. The regulations provide for the extraction of vapour from covered apparatus and for the removal of fumes from rooms by through ventilation by a fan or other efficient means. In crushing materials or filling cartridges with them, an efficient exhaust draught must be so arranged as to carry away the dust as near as possible to the point of origin. An employer must supply suitable overalls, which must be washed every week, or suits of working clothes, a room for changing, another for the storage of overalls, and a messroom. All persons handling the substances are to be supplied with india-rubber gloves, and a suitable scoop must be used in filling cartridges by hand. The workers are required to use the protective appliances, and to clean their hands before partaking of food. Every person employed must be examined by the certifying factory surgeon of the district once a month. The surgeon has power to suspend any person from work. These general regulations are based on the well recognized toxic character of these substances, and the risk of absorption through the skin and subsequent effect on the blood, and though they have no special reference to the prevention of tumour of the bladder are of a nature calculated to attain this end.

Mr. J. F. Dobson, surgeon to the Leeds General Infirmary, has been good enough to make some general inquiries in the North of England, where large dye factories have been established in recent years. At one large factory near Huddersfield the medical man who had had charge of the employees for some years stated that he had seen some cases of haematuria, but had looked upon them as of renal origin; so far as he knew, none of the cases had developed tumour, but none had been examined with the cystoscope. Mr. Dobson, after an examination of the records of the large number of cases of bladder tumour he has seen in recent years, tells us that he is unable to satisfy himself that such tumours occur more frequently in individuals employed in the dye industry than in others; at the same time, of the last two cases he has seen, one was employed in the manufacture of benzol and the other was a dyer. He points out, however, that the workers in the North of England have probably not yet been exposed to the poisons for a length of time sufficient to produce the lesion, and suggests that Kuchenbecker's test mentioned above might be of use in ascertaining whether the urinary condition is prevalent.

Papilloma of the bladder develops so slowly that the slight initial haematuria would not be regarded seriously either by the worker or the medical man if they were not aware of the danger. The evidence shows that tumours of the bladder due to this cause do not develop until the individual has been exposed to the action of the injurious compounds for many years. The condition can only be diagnosed at a stage when satisfactory treatment is possible if routine examination of cases presenting suspicious symptoms is carried out. This will involve the use of the cystoscope—not an easy instrument to manipulate. Early diagnosis is, Mr. Dobson points out, of extreme importance, for in its early stage papilloma of the bladder can be satisfactorily treated by endovesical diathermy; operation for papilloma gives less satisfactory results. Primary malignant disease of the bladder is very rarely suitable for operative treatment.

A NEW monthly journal, *The Japan Medical World* (Nippon-No-Ikai), has been founded by Dr. S. Tsuchiya in Tokyo, with the assistance of many eminent members of the Japanese profession desirous of making medical progress in Japan better known. The journal, which is written in English, will contain original articles, notes of current Japanese literature, reports of medical societies, and medical news. The annual subscription is 6 dollars, post free. The offices are at No. 10 Omotejinbocho, Kanda, Tokyo.

British Medical Journal.

SATURDAY, APRIL 30TH, 1921.

A CONSTITUTIONAL PROBLEM.

A BODY one of whose two main objects is "to maintain the honour and interests of the medical profession" must find itself periodically under the necessity of modifying its constitution and machinery to meet the needs of the times. The British Medical Association, in its history of nearly ninety years, has never hesitated to make adjustments of this kind even when they entailed considerable departures from custom and tradition. Notably in 1903 radical changes were made in order to create smaller local units and to bring into existence a Representative Body which should be able to ascertain and formulate the desires of a profession organized on modern democratic lines.

The time has come to make possible another step, the necessity for which has arisen from the Empire-wide scope of the Association. Just as British colonies and dependencies have in the course of their growth demanded greater freedom in dealing with their own affairs and have brought about, with the consent and goodwill of the mother country, the necessary changes in their forms of government and their relations with the Home Government, so it has happened with the Branches of the Association in the great Dominions. Gradually, over a period of many years, changes desired by them have been effected by a liberal interpretation of the Articles and By-laws of the Association, and, with very few exceptions, the Central Council has always been able to meet their wishes for greater freedom. The oversea Branches have, in fact, almost unlimited autonomy. But there have been demands which the legal advisers of the Association have ruled could not be met by anything less than a radical revision of the constitution. For example, the right to hold property, to sue and be sued as separate entities, to provide medical defence facilities, and to invest and otherwise deal with money, have been held to be powers that could not legally be exercised by Branches as such. These difficulties can be and have been got over in the oversea communities, as well as in England, by the formation of trusts. That method is still available, but it is an indirect and somewhat cumbersome method. In order that the Branches in Australia, where the problem has arisen most acutely, should understand that no efforts would be spared to meet every legitimate demand on the Association, the Annual Representative Meeting at Cambridge last year approved the proposal that steps should be taken whereby any oversea Branch or collection of Branches feeling such a step to be necessary should be able to leave the Association, form themselves into a separate body with all the powers they desired, and affiliate themselves in their new form to the Association. In the consideration of this matter the Council was greatly aided by Dr. W. T. Hayward, C.M.G., formerly and now again Chairman of the Federal Committee of the British Medical Association in Australia, and Dr. H. S. Newland, C.B.E., D.S.O., of Adelaide, both of whom were in this country on military service.

The methods by which this new departure can be brought about were fully described in the SUPPLEMENT to the JOURNAL of March 5th last, and it will be for the Representative Body at Newcastle-upon-Tyne next July to accept or decline the new Articles and By-laws in which the proposals are embodied. They need and deserve the careful study of every member of the Association interested in the evolution of its constitution. They are, we know, receiving anxious consideration by the oversea Branches specially interested, and we are glad to learn that Australia is sending a special envoy to Newcastle in the person of Dr. R. H. Todd, the Honorary Secretary of the Australian Federal Committee, who has been very prominently concerned in the progress of the Association in Australia for many years. New Zealand is sending Dr. W. Irving of Christchurch to act in a like capacity for that Branch. Both are assured of a hearty welcome. The attitude of the Representative Body will, of course, be influenced greatly by the spokesmen from overseas.

But while the Association at home is making provision for such means of affiliation, it must not be supposed that it looks upon this as anything but a regrettable necessity—if, indeed, the oversea Branches should ultimately believe it to be a necessity. We are sure that all the home members would much rather preserve the present relationship if possible. It is for the oversea Branches to decide whether they really need this complete independence. If they can see their way we would much rather have them as Branches of the old Association than as a new Association, with another name, affiliated to the British Medical Association. We would rather have them as brothers than as cousins; but it is for them to decide.

There is another aspect of this question which the Representative Body will be called upon to consider. Is affiliation to be open to other Branches besides those overseas? The question has arisen in Ireland, where there has for some time been a desire on the part of the Branches of the British Medical Association and the Irish Medical Association to fuse themselves into one association which, while composed of both bodies, will be neither, but a new body which, it has been proposed, may affiliate itself to the British Medical Association. If the new Articles and By-laws are carried it would be open to the proposed new body to apply for, and for the Representative Body to receive it in, this new relationship. More than this, the resolutions carried at Cambridge contemplated the possible affiliation of bodies in this country formed to safeguard the interests of special sections of the profession, or even bodies not wholly medical but dealing with the interests of some allied profession. The new Articles and By-laws as set out in the SUPPLEMENT of March 5th make provision for all these developments, and it will be for the Divisions in the next few weeks to decide how widely they wish the door to be thrown open. The conditions on which affiliation is to be offered are to be decided in each particular case by the Representative Body itself. In the Annual Report of Council published in this week's SUPPLEMENT (pp. 105–159), will be found a series of memoranda or rules setting out in skeleton form the kinds of agreement that might be made with any bodies admitted to affiliation. The whole subject is of great difficulty and delicacy: we hope we have said enough to convince members that they should study it thoroughly and make up their minds how far the new proposals are for the good of the Association as a whole, and therefore to be accepted.

PHYSIOLOGY AND CLINICAL MEDICINE IN SHEFFIELD.

THE Panel Committee of Sheffield has given £1,000 to the University of Sheffield to promote the policy of bringing physiology into closer relation with the practice and teaching of clinical medicine. The new departure is interesting from both points of view—that of the University and that of the Panel Committee. The aim of the University authorities and of its medical faculty is to break down the barrier which has been allowed to grow up between physiological and clinical studies. Physiology derives directly from medicine, and it was necessary that the younger discipline should pursue its own way until it had reached a certain standard of accurate and established knowledge. It is apparent by many signs that this stage has been reached. An instance is afforded by recent work in dietetics, and especially as to vitamins, which has yielded important results on the border-line of physiology and pathology.

It will be remembered that a short time ago Dr. Edward Mellanby, a physiologist who had recently given much attention to vitamins, especially in connexion with rickets, was appointed professor of pharmacology in the University of Sheffield. At the same time the board of the Royal Infirmary, in order that the new professor and his department might not be divorced from clinical work, appointed him to a vacant post of honorary physician to that great teaching hospital. In pursuance of this policy of securing for the patients of the infirmary and the students of the medical faculty the benefits of expert physiological advice and teaching, the Board, with the consent of the University, also appointed Professor J. B. Leathes, M.B., F.R.S., the present incumbent of the chair of physiology, to be consultant physiologist to the Infirmary. Another development of the same policy is seen in the appointment, through a joint arrangement with the Royal Hospital and with the approval of the University, of Dr. Imrie to be full-time clinical physiologist to both hospitals. Dr. Imrie had previously been deputy professor of biochemistry at Toronto.

These appointments have vastly strengthened the medical work in the city, both on the educational and technical side, and by the generous assistance they have given to the Department of Pharmacology and its field laboratory the panel practitioners of Sheffield have not only afforded most valuable support to the University of their city but are helping research work which promises to yield fruitful results in therapeutics; it will be interesting to explain how it has come about that they are in a position to do so.

By the exercise of strict economy and the use of the voluntary labour of its members during the war years, the Panel Committee was able to save from its funds enough money to invest £1,000 in War Loan. It was felt at the time by the Committee that it was very necessary to have some accumulated funds for use in any acute emergency which might arise, and the fact that the Sheffield Panel Committee was financed by a purely voluntary scheme rendered this possible. When the financial situation was reviewed at the beginning of this year, it was seen that the economies had resulted in a considerable surplus; so much so that the voluntary levy could be suspended for at least six months, and that a sum of about £1,000 could be disposed of. The matter was fully considered at several meetings of the Panel Committee, and legal opinion was taken. Finally a meeting of practitioners on the panel was called, and at it a resolution was passed directing that War Stock to the amount mentioned should be transferred to the University with a request that it should be earmarked for the equipment of a Field Research Laboratory in the Department of Pharmacology under Professor Mellanby. This has now been done.

Professor Mellanby's department will consist of a laboratory at the University, and of a fully equipped field laboratory for experimental work, on the lines of his field laboratory at Cambridge, which many members visited during the Annual Meeting last year. Professor Mellanby's work on rickets in relation to fats and vitamins has, as is well known, revealed many hitherto unsuspected aspects of this vexed problem; whilst Mrs. Mellanby's brilliant proof that the problem of dental caries is largely a matter of biochemistry, rather than of mechanics or bacteriology, is closely related to her husband's work. Professor Mellanby's association with clinical medicine has already produced some other results which promise to bear valuable fruit, for we are told that, in a preliminary communication recently made to the Physiological Society, he was able to announce that if patients with Graves's disease were put on to a relatively low diet, almost free from fat, with small doses of cod-liver oil and potassium iodide, they gained weight rapidly and the symptoms were ameliorated.

The action of the Sheffield Panel Committee may help the public to an understanding of the medical point of view, about which there is a good deal of misapprehension. The representatives of Approved Societies too often seem to believe that the medical profession is always thinking of schemes to get higher rates of pay, and medical correspondents of newspapers that it is ready to be the dupe of anyone who with sufficient drum-beating proclaims a new specific remedy for some intractable disease, or alternatively to be superciliously sceptical. The gift to the Pharmacological Department of the University of Sheffield is evidence of the real orientation of medical opinion towards the discovery of fundamental facts as to the functions of the organs of the body, and the causes, prevention and remedy of their disorders.

SECURITY OF TENURE FOR PUBLIC HEALTH OFFICERS.

THE efforts which have been made by the British Medical Association for many years past to obtain security against unfair dismissal are at length bearing fruit. After a deputation to the Government in June, 1914, a promise was made by the then President of the Local Government Board, Mr. Herbert Samuel, that if it proved within its power to do so the Board would make an Order giving security of tenure to whole-time medical officers of health and inspectors of nuisances. The issuing of this Order was deferred owing to the disorganization of the medical services of local authorities due to the war, but in May, 1920, Dr. Addison, upon being reminded of Mr. Samuel's promise, stated that he would have the Order proceeded with, and would go as far as he could in giving security to whole-time medical officers of health and inspectors of nuisances. The Order, dated April 12th, 1921, has now been issued. It applies to whole-time medical officers of health and sanitary inspectors (inspectors of nuisances) appointed by the council of a county borough or county district, or by a port sanitary authority. The council of a county district includes a municipal corporation or an urban or rural district council. Appointments of these officials made after May 1st next will be without limit of time, after a probationary period of twelve months, at the expiration of which the appointment must be confirmed by the Minister of Health. The definition of a whole-time officer is one who is required by the terms

of his appointment to devote the whole of his time to the duties of his office or of any other office or offices held by him under any local or other public authority. The effect of the Order is that all whole-time medical officers of health will have security of tenure, except those appointed before May 1st, 1921. In order to put them in the same position as their colleagues, Sir Philip Magnus, at the instigation of the Association, introduced the Public Health (Officers) Bill in the House of Commons on April 12th, and he had the good fortune to secure its second reading on April 14th.

THE UNIVERSITY OF BRISTOL.

THE University of Bristol, like most of the other English universities, is making a public appeal for general endowment—a course it is well entitled to take in view of the substantial support the University is receiving from local education authorities in the West of England. In explaining recently the grounds of the appeal, the Vice-Chancellor, Sir Isambard Owen, D.C.L., M.D., made it plain that the needs of the Faculty of Medicine are to be accorded a distinctive place in it, the endowment of professorships in the faculty being put forward as an urgent matter. The Bristol Medical School, now incorporated in the University, has a long and honourable history, illustrated by many distinguished names; and under the aegis of the University (founded in 1909) has achieved a reputation which we hope will make a powerful appeal to the public spirit and generosity of the West of England. The number of medical students in Bristol is at present 155, and the faculty includes also a flourishing school of dental surgery, with 75 students.

SECRET REMEDIES AND THE GERMAN MEDICAL PRESS.

IT would appear that the sale of quack remedies has greatly increased in Germany under the new order, and many bitter things are said in the medical journals about democracy in its relation to the control of unqualified practitioners and their remedies. Three periods during which the fortunes of the quack oscillated violently can, it is said, be distinguished. In the first, the pre-war period, there was a neck-and-neck race between the enterprising quack and the paternal Government, which, by new regulations, was constantly heading off new devices for exploiting the credulous. At one stage in this period it was calculated that of seventy-five secret remedies analysed, as many as forty-eight were directly dangerous to life, and another eleven were calculated to be injurious. In the year 1898–99, the turnover of secret remedies in Germany amounted to 30 million marks, and 500,000 kilograms of secret remedies were imported yearly.[1] In the second period, which corresponds with the great war, the lot of the vendor of quack remedies was hard. Though he might attempt to distribute his goods among the troops as more or less authorized gifts from Hindenburg or Zeppelin, his campaign was soon cut short by the military authorities, whose regulations ultimately became very stringent. The third, or post-war period, would seem to have afforded brilliant openings for nimble-witted adventurers, who have found in the sudden political change unrivalled opportunities for avoiding punishment. Recently a circular signed by Professors Heffter, Klemperer, Lennhoff, and Schwalbe, and the chairman, Dr. Herzau, has been addressed by the Association of the German Medical Press to the editors of medical periodicals, pointing out that the impudence of advertisements of all kinds of quack remedies is increasing, and asking the editors that they should arrange with the publishers to have a controlling share in the acceptance or refusal of advertisements, if they already do not possess such power. The manifesto recommends that only such advertisements of remedies should be accepted as state the composition of the remedy, and that advertisements should on principle be refused which appear in the daily press and in form and matter are bombastic, extravagant, untrue, or misleading.

[1] *Deut. med. Woch.*, January 20th, 1921.

ACUTE BENIGN LYMPHOBLASTOSIS.

DISEASES of the lymphatic glands present a number of problems awaiting solution, and among these the influence of acute adenitis on the blood picture is of considerable interest. The tendency of glandular inflammation and irritation to produce a lymphocytosis is fully recognized, but the degree of this reaction may vary considerably, and in some instances the blood count may strongly suggest acute lymphoid leukaemia, and indeed doubt as to the correctness of this diagnosis may only arise when the patient recovers. In glandular fever, originally described in 1889 and lately rather forgotten, though Drs. H. L. Tidy and Morley recently gave a full clinical account of it in our columns,[1] there are very few blood counts available, but in some examples of acute lymphadenitis the diagnosis from acute lymphoid leukaemia in an early aleukaemic stage—that is, with little increase in the total white count—may cause much anxiety. Thus T. P. Sprunt and F. A. Evans recently described, under the name of infectious mononucleosis, a fairly definite group of 6 cases with fever, enlarged glands, a leucocytosis up to 20,000 per c.mm., a slight increase in the large mononuclear-transitional cells, and many pathological lymphoid forms.[2] A very similar, if not identical, series of cases has just been recorded by W. A. Bloedorn and J. E. Houghton[3] at the United States Naval Hospital, Annapolis, Maryland, as acute benign lymphoblastosis; all the four patients were young adults and showed febrile enlargement of the lymphatic glands, particularly the cervical and submaxillary, and sometimes of the spleen, usually after infection of the tonsils or upper respiratory tract; leucocytosis was not constant, but the striking change was a mononuclear increase with lymphoblasts predominating, and often the presence of cells with the clover-leaf or bilobed Rieder nucleus. Three out of the four cases showed Vincent's organisms in throat smears taken during the acute phase, but examination of several cases of Vincent's angina proved that lymphoblasts are not a common feature in this form of infection. All the patients recovered, but the differentiation of this condition from acute lymphoid leukaemia may be very difficult; the absence of degenerated and fragile cells in the blood smears, the early fall of temperature, the mild course, and the absence of haemorrhages and of high leucocyte counts, are the distinguishing features.

EFFECTS OF CARBON MONOXIDE ON THE EYE.

THE effects of carbon monoxide upon the eye, about which very little can be found in the textbooks of ophthalmology, form the basis of an interesting paper by W. H. Wilmer of Washington in the *American Journal of Ophthalmology* for February, 1921. He gives a general survey of the subject and deals with the nutritional effects of carbon monoxide poisoning, as well as the eye complications. The paper reads like a ghost story in places, and certainly throws light on the question of haunted houses. Wilmer gives the notes of two cases: in the first a whole family was subjected to the slow poisonous effects of the gas fumes escaping from a faultily constructed furnace into the house instead of going up the chimney; the member of the family who suffered most was a small boy aged 4 years. The general symptoms were noticed by all members of the household, and consisted in listlessness, delusions, and hallucinations. Wilmer saw the little boy some four years after he had been taken from the poisoned house; his general health had been much upset, he was anaemic, and suffered from gastric

[1] BRITISH MEDICAL JOURNAL, 1921, i, p. 450.
[2] Ibid., 1921, i, 95.
[3] W. A. Bloedorn and J. E. Houghton: *Arch. Int. Med.*, Chicago, 1921, xxvii, 315–325.

disturbances; though intelligent for his age, he was slow in reading. The chief change found was a contraction of the visual fields. The fundus did not present any obvious abnormality, but the disc is stated to have been high-coloured; charts of the fields of vision taken at this time show a general contraction down to within 20 degrees of the fixation point. As time went by this contraction for white gradually improved, and after two years the field for white was shown to be very nearly full, but an enlargement of the blind spot and a large paracentral scotoma remained. The second case occurred in a man, aged 35, who was at work in a closed room removing paint from a mantelpiece by means of a gasolene torch. After about two hours' work faintness, giddiness, nausea, and headache came on, but quickly disappeared on ceasing work, when he noticed some mistiness of sight. On resuming work a similar train of symptoms occurred, but the visual defect, which had quickly cleared up after the first bout, now persisted. The man saw several oculists, who diagnosed optic atrophy; the fields show a slight general contraction for white, and it is stated that the colour sense is defective, while central vision is reduced. We agree with the author as to the importance of having household furnaces of this kind, as well as all gas fixtures, properly inspected in order to obviate such domestic calamities; in Wilmer's first case it appears that the small boy was not far off the point of death when he was taken from the poisoned house. It would be well to bear this cause in mind when dealing with unexplained cases of optic atrophy.

BILHARZIASIS AND ITS TREATMENT.

AT the annual meeting of the British Medical Association at Cambridge last year Dr. P. Manson-Bahr, as reported in the JOURNAL on August 14th, p. 235, related some encouraging experiences he had had in the treatment of human trypanosomiasis and kala-azar by intravenous injections of the acetyl-para-aminophenyl stibiate of soda, called for convenience "stibenyl" by the manufacturers, Messrs. Allen and Hanburys. It contains 34.3 per cent. of antimony. He found, however, that this preparation was of no value in bilharziasis, and a patient on whom it had no effect was cured of the disease after 16 grains of tartar emetic. The toxicity of tartar emetic is a great disadvantage, as extremely small doses only can be tolerated by man, and the treatment is necessarily protracted. Dr. F. G. Cawston, of Durban, who for some considerable time has been carrying on researches into the treatment of bilharziasis and allied conditions, has therefore sought to obtain a therapeutic agent of less toxicity than tartar emetic, for which purpose he received last year a grant from the British Medical Association on the advice of the Science Committee. Articles by Dr. Cawston have been published in our columns (November 20th, 1915; July 29th, 1916) in which he stated that the best treatment of bilharziasis at that time was by means of diuretics and urinary antiseptics; hexamine, which is a slight diuretic as well as a powerful urinary antiseptic, being considered the most valuable. He pointed out also that too much reliance should not be placed on remedies that had been recommended as cures unless microscopical examination of the urine of the persons said to have been cured had been made. We have now received a communication from Dr. Cawston containing the results of his tests of the efficacy in the treatment of bilharziasis of two new and untried preparations of antimony, which like stibenyl have been made by Messrs. Allen and Hanburys—acetyl-para-phenylene diamine antimony tartrate (antimony 26 per cent.) and para-phenylene diamine antimony tartrate (antimony 28 per cent.). Dr. A. Wallace, of Broken Hill, tested for Dr. Cawston the effect of stibenyl on a case of trypanosomiasis, but did not consider that it acted so well as tartar emetic, so, in view of the opinion also of Dr. Manson-Bahr, Dr. Cawston did not test that preparation on bilharziasis. The other two preparations he did not find less toxic than an equivalent quantity of potassium tartrate of antimony (tartar emetic), but the first of the two was in one case at least effective in curing bilharzia disease of long standing. As antimonyl sodium tartrate is definitely less toxic than either of the two preparations, and is apparently equally effective, Dr. Cawston does not consider there is any advantage in employing the new preparations of antimony on further cases of bilharziasis in South Africa.

MIDHURST SANATORIUM.

THE report for 1920 of the King Edward VII Sanatorium, Midhurst, of which Dr. H. O. Blanford is superintendent, contains many points of interest. Treatment by graduated labour, combined with adequate rest, was more systematized during the year, the work being carried out in the grounds and gardens of the institution; the treatment had a good effect both on the physical and mental conditions of the patients. In April, 1920, an *x*-ray department was opened, which has already proved of great assistance in the diagnosis of indefinite cases. In the pathological laboratory, which was reopened after having been closed during the war, a considerable amount of research work has been carried out. The routine examinations of sputum has been modified to some extent; positive cases are examined less frequently, and more attention is being devoted to repeated examinations of negative cases. This procedure was adopted owing to the fact that a considerable number of negative tests were found to be requisite to justify the presumption that tubercle bacilli were no longer present. In most of the positive cases the bacilli were usually easily found, but repeated examinations were necessary in some cases before their presence could be demonstrated. Up to the present both sedimentation methods and guinea-pig inoculation have proved negative in cases in which tubercle bacilli were not found after repeated careful examination of films stained by the Ziehl-Neelsen method. An investigation was carried out to ascertain whether Pfeiffer's bacillus commonly infected the lungs of tuberculous patients, and whether phthisical patients were commonly chronic carriers of the bacillus. In only one case, however, was the impression given that Pfeiffer's bacillus was playing a part different from that of the other apparently innocuous organisms usually found in the respiratory tract. An investigation is being carried out also on the acid-fastness of tubercle bacilli, and it is hoped to establish definite figures as to the acid-fastness of tubercle bacilli which will serve as a basis for comparison of the various decolorizers; they will also serve as a basis for an investigation upon the variability of acid-fastness in different strains of tubercle bacilli found in the sputum. Statistics are given of the 275 cases discharged from the sanatorium during the year, which show the value of the early recognition and treatment of pulmonary tuberculosis. Excluding one patient in whom no definite evidence of disease was found, the condition on discharge was as follows: of 79 slight cases in 50 the disease was arrested, 21 were "much improved," 7 were "improved," and one was "stationary or worse"; of 89 cases in which the disease was more extensive than in the first group, but affected at most the whole of one lobe, the note in 21 was "disease arrested," 51 were "much improved," 15 "improved," and 2 were "stationary or worse"; but of the 106 more severe cases, including all those with considerable cavities, 4 only had "disease arrested," 44 were "much improved," 39 were "improved," and 19 were "stationary or worse." Sir StClair Thomson examined 268 cases laryngoscopically, and in 32 of these local lesions were found; 25 were in the group of advanced disease. In regard to prognosis the statistics of ultimate results are rather striking. The table in which are grouped all cases discharged since 1906 in the sputum of which tubercle bacilli were demonstrated in the

sanatorium, shows that while after five years the number alive was only between one third and one half of the original number discharged, yet after ten years the number of deaths had been very little, if at all, increased.

GOATS AND GOAT'S MILK.

WHILE all the world comes to Britain to buy horses, bulls, sheep, and pigs, comparatively little interest has until recently been taken in goats. Their number in proportion to the population has been very small as compared with such countries as Switzerland, where goat-breeding has been studied for centuries. There has, however, long been a band of goat-keepers in this country, faithful though small, and information as to the choice of goats and the method of keeping them was available when, owing to the high price of milk and milk products during the war, public attention was turned to possible alternatives. Another circumstance which may lead to greater use of the goat in this country is the increase in the number of small holdings which is taking place in some parts of Great Britain, and especially, perhaps, in Wales. It has always been difficult for the small holder to get cow's milk; at the best he may have to send a long way for it, and at the worst none may be available, all being sent away to towns or converted into butter or cheese. For the small holder the goat is the ideal milk-yielding animal, and if skilfully managed is easy and economical to keep. It is true that to the unaccustomed palate the flavour of goat's milk is less agreeable than that of cow's milk, and, owing to its white colour, it has not the creamy rich appearance of cow's milk. Notwithstanding the colour, the percentage of fat in goat's milk is about the same as in cow's milk. We cannot agree with those enthusiasts who state that the goat is immune from tuberculosis, but it seems to be true that goats rarely suffer from that disease. It has also been stated that the milk of the goat is more nearly similar to mother's milk than the milk of the cow; but it differs so slightly from cow's milk that it has no advantage as a food for infants from that particular point of view. Yet the milk of the goat has valuable qualities, and goat-keeping and goat-breeding deserve every encouragement in this country. In this direction much useful spadework has been done for some years, and is being done to-day, by the British Goat Society, which has just published its first *Year Book*.[1] In this are included a large number of articles dealing with the goat, goat-breeding, and milk production. Prospective goat-keepers and goat-breeders will find the volume full of information, and it is well illustrated. The *Year Book* has been edited by the honorary secretary of the society, Mr. T. W. Palmer, and is published from the office at 5, Fenchurch Street, E.C.

BENVENUTO CELLINI'S MEDICAL EXPERIENCES.

CLOSELY allied to the psychological interest aroused by the history and trials of detected criminals is that derived from the candid confessions and diaries of J. J. Rousseau, Samuel Pepys, and Benvenuto Cellini. The last, though a thorough-paced rogue, has long had a fascination for the general reader and has been fortunate in his English biographers—John Addington Symonds and Augustin Birrell. Cellini (1500–1571) lived in eventful and lawless times, and as a highly artistic designer of jewellery and metal work played a prominent part in the Renaissance. During this period of the reformation and the revival of learning, medical practice was still hand-in-hand with quackery and superstition; the great epidemic of syphilis extended to Italy by 1494, and poisoning was a fine art in that country. It is therefore interesting to glance at Benvenuto Cellini's impressions and experiences of medicine as recently set forth by Dr. Jacob Rosenbloom,[1] of New York, and to compare and supplement them with Sir D'Arcy Power's[2] paper on the same subject written in 1898. Cellini had plague at the age of 23, malaria more than once, and on one of these occasions drank freely of water against medical advice and promptly improved; he describes an illness lasting two months, and ascribed to the bad air of Pisa, which may have been enteric fever; he was the victim of gout in his later years, and had several surgical accidents, such as fracture of the leg and a splinter of steel in the eye. But perhaps the most interesting of his remarks are on the subject of his attack of syphilis—or as it was then called in Italy, the French disease—which remained dormant for four months and then suddenly broke out all over his body. After following for some time medical advice without any benefit, he took guaiac (introduced from America about the year 1508) against the orders of the first physicians in Rome, and after fifty days was "cured and as sound as a fish in water." But from exposure he fell into a slow (? syphilitic) fever, and in spite of the medical dictum that if he took guaiac with fever on him he would be dead in a week, he disobeyed and was well in four days' time. Later on he had a painful inflammation of the eyes, cured by a simple eyewash prescriped by the Pope; this is considered by Rosenbloom to have been a functional affection, whereas Sir D'Arcy Power thinks it was iritis. The practice of mercurial fumigation and inunction carried out by Giacomo da Carpi, who amassed a large fortune thereby, is mentioned by Cellini, with the sneer that the so-called French disease is very partial to priests and especially to the richest of them. He alleges that at least three attempts were made to poison him; in one pounded diamond was to be administered in his food, with the object of setting up acute enteritis in the way that pounded glass acts, but the man entrusted with the grinding substituted a soft stone—a greenish beryl—so enriching himself and incidentally, as Cellini believed, saving him from a painful death. When he was about 48, corrosive sublimate, or as Power suggests, arsenic, was put in his sauce and caused acute colitis, but, to quote his own words, "the poison worked so well that whereas, before I took it, I had but perhaps three or four years to live, I verily now believe that it has helped me more than twenty years by bettering my constitution." It would indeed be an irony of fate if an attempted criminal poisoning really benefited the intended victim by curing an existing disease, but Cellini's conclusions are often based on very insecure grounds. His comments on his numerous medical advisers are, as a rule, highly critical.

THE STATISTICS OF TYPHOID VACCINATION.

REFERENCE was incidentally made a short time ago to French statistics which it was thought showed the value of antityphoid vaccination from an unexpected angle. The evidence was presented by Professor Chauffard to the Académie de Médecine, and the argument was so ingenious that it is worth while to reproduce it. He ascertained the age and sex incidence of the disease at his clinic at the St. Antoine Hospital (Paris) before and after the war. During the years 1912–13 there were 11 men and 42 women, the mean age being 24 for the former and 27 for the latter. Under the age of 20 the percentage was 27.5 for men and 19 for women; after 20 years of age it was 72.5 for men and 81 for women. During the years 1918–19–20 there were 10 cases in men and 23 women. For the latter the mean age remained at 27, and the percentage under 20 years was 24.5, while after 20 it was 75.5. These proportions are virtually the same as in the pre-war statistics. But on the male side things have greatly changed, for while the mean age was 17.5 years, the percentage under 20 years of age was 90, and after 20 only 10. As a matter of fact all the male typhoid patients

[1] *The British Goat Society's Year Book for 1921.* Price 1s. 3d. 5, Fenchurch Street, London, E.C.3.

[1] J. Rosenbloom, *Ann. Med. History*, New York, 1919, ii, 348-366. (Published 1920.)

[2] D'Arcy Power, *Quart. Med. Journ.*, Sheffield, 1898, vi, 199-218.

in his clinic, with the exception of a man of 45 taken prisoner early in the war and unvaccinated, were between 16 and 18 years of age. The salient fact, then, is that there were no male typhoid patients except the very young who, not having been in the army, had not been vaccinated, while the female figures remained unchanged. This, Professor Chauffard contended, is an argument for applying this protective measure on a large scale among the civil population—a proposal which is receiving attention in France at the present time.

The King has been pleased to approve that the honour of knighthood be conferred upon Dr. James Craig. Sir James Craig, who was elected President of the Royal College of Physicians of Ireland in October, 1919, is King's Professor of the Practice of Medicine in the School of Physic, Trinity College, Dublin, Physician to Sir Patrick Dun's Hospital, and Physician in Ordinary to the Lord Lieutenant. He was at one time President of the Leinster Branch of the British Medical Association, and is a member of the Irish Committee of the Association.

We regret to announce the death, on April 23rd, of Mr. Henry Edward Juler, F.R.C.S., consulting ophthalmic surgeon to St. Mary's Hospital, London.

Medical Notes in Parliament.

[From our Parliamentary Correspondent.]

The Budget.

The budget statement made by Mr. Chamberlain (for Sir Robert Horne, the new Chancellor of the Exchequer), on April 25th, had no surprise except the announcement of the National War Bonds conversion scheme whereby such loans maturing in the next five years may be funded on terms which appear to be advantageous to investors.

The balance sheet for 1920–21 showed an actual revenue of £1,425,985,000, against an estimate of £1,418,300,000, and an actual expenditure of £1,195,428,000, against an estimate of £1,184,182,000, thus affording a surplus of £230,557,900, which, with sums statutorily provided for debt reduction and Exchequer balances, gave a total sum of £259,500,000 for debt reduction within the year. The actual reduction was less by £3,000,000, owing to the influence of the exchanges in the redemption of foreign debt.

Under a change now made for the first time, the estimates for 1921–22 are divided into ordinary and extraordinary accounts. The ordinary revenue is forecasted to be £1,058,150,000, and the expenditure £974,023,000, leaving a surplus of £84,127,000, which, however, is subject to expenditure and losses due to the coal strike. The extraordinary receipts and expenditure accounts show an estimated revenue of £158,500,000 from the realization of war assets and a debt of £65,705,000 for liquidation of war commitments, giving a surplus of £92,795,000, subject to a liability on termination of railway agreements. The full surplus, subject to these two liabilities, is thus put at £176,922,000. Mr. Chamberlain reckons that there may be an ultimate surplus of £80,000,000 for the reduction of the National Debt; which, with sinking fund allowances, may afford a total cash provision of £103,500,000 for this purpose, which is very different from the sum of £259,500,000 in the year just ended.

These figures are based on the maintenance of the taxation of last year in all respects, save that the Excess Profits Duty is abolished, and that the higher charges on cigars and sparkling wines, having proved unproductive, are ended. The surtax on cigars is abandoned; and instead of 7s. per gallon tax and 33½ per cent. *ad valorem* duty on sparkling wines, the duty is made 15s. per gallon.

In connexion with the income tax, Mr. Chamberlain referred to the fact that a number of claims were being received under provisions which operated to relieve falling incomes during the war; it was clear that the intention of Parliament last year was to cancel those provisions for 1920–21 and future years, and his advisers were of opinion that that intention had been effected; but, to put the matter beyond doubt and to dispose of it quickly, it was proposed to insert declaratory provisions in this year's Finance Act to clear up the questions that were being raised.

It should be noted that the estimates for the current year (1921–22) include £120,000,000 to come from arrears of Excess Profits Duty. Mr. Chamberlain stated that the assessment standing amounts to £300,000,000, and a large addition has to be made; but, on the other side, there will have to be allowances for adjustments and relief, and that is why the estimate for the current year is comparatively small. A further sum will be available under this heading next year, but this will be very much less. Mr. Chamberlain added significantly he could not expect that the ordinary revenue for next year, 1922–23, would be more than £950,000,000; and the Chancellor of the Exchequer is taking steps for further retrenchment by Government departments next year.

In the course of the debate some doubt was expressed by several private members whether the estimate for revenue was not sanguine. It has to be remembered, however, as regards income-tax yield that the returns on business are taken on a three-years' average; and there the Chancellor of the Exchequer, whatever the depression in the past year, will be greatly helped by the figures of the two preceding years in assessing his demand. But that fact will not assist taxpayers in finding the requisite money, and the burden for them will be serious.

Tuberculosis Bill.

Measure through Grand Committee.

The Public Health (Tuberculosis) Bill was taken in Grand Committee on April 22nd. Sir Watson Rutherford was in the chair, and about forty members were present. The first discussion took place on Clause 1, the text of which was as follows:

(1) Where the council of any county or county borough has, before the passing of this Act, made arrangements for the treatment of persons suffering from tuberculosis (including persons insured under the National Health Insurance Acts, 1911 to 1920) at or in dispensaries, sanatoria, and other institutions in accordance with a scheme or under an agreement approved by the Local Government Board, the Minister of Health, or the Welsh Insurance Commissioners, as the case may be, that council shall, for the purposes of this Act, be deemed to have made adequate arrangement for the treatment of tuberculosis so long as such scheme or agreement, with such modifications, if any, as the Minister may on the application of the council from time to time approve, continues in operation.

(2) Where the council of any county or county borough fails to make adequate arrangements for the treatment of tuberculosis at or in dispensaries, sanatoria, and other institutions approved by the Minister, the Minister may, after giving the council an opportunity of being heard, make such arrangements as he may think necessary for the purpose of such treatment.

Any expenses incurred by the Minister in arranging for such treatment may be paid in the first instance by the Minister out of moneys provided by Parliament, and the amount of any expenses certified by the Minister to have been so incurred shall be paid to the Minister on demand by the council and shall be recoverable as a debt due to the Crown.

Mr. Grundy proposed in Subsection (1) to leave out the word "where" and to insert "it shall be the duty of." As the clause stood it appeared to him that schemes already approved, whether adequate or inadequate, would be deemed quite sufficient, and he urged that there ought to be a review of all these schemes, and especially of those with respect to county boroughs. The amount of rate levied in the county boroughs varied from a farthing to fourpence in the £.

Sir Alfred Mond said it was impossible to accept the amendment, as it would change entirely the drafting arrangement of the bill without adding anything very material. The arrangements of the county and county borough councils were not continued under the clause. The schemes were considered adequate so long as they were satisfactory. Subsection (2) covered materially the point of the amendment. The bill was the result of very careful and lengthy negotiations with the councils and its passage into law at the earliest possible moment was of urgent importance. Sanatorium benefit expired at the end of a month. It was impossible to accept in Committee an amendment which changed entirely the character of an agreed bill and did not forward matters, but would really make obscure what was now clearer.

Mr. R. Richardson regretted that the Minister would not accept the amendment. It was known to many administering the measures with regard to tuberculosis that up to now the minimum has been aimed at. He believed that money spent by authorities to do the minimum, so that they might say they were doing something, was wasted money. Without such power of review it would be very hard for the Ministry of Health to ask councils whose measures had been approved to do more than they had already done. Yet the experience of those connected with National Insurance and friendly societies was that before anything could be done in 50 per cent. of the cases the disease had proved fatal.

Sir H. Nield, on behalf of the Middlesex County Council and the County Councils Association, supported the bill as it stood. This was not the time to suggest to local authorities that they must spend more and more rates.

Mr. Thomson challenged Sir A. Mond's assertion that the bill should be taken as agreed because the local authorities had generally accepted it through their associations. He submitted that Insurance Committees and their Sanatorium Committees

were much more concerned. The great bulk of expenditure on sanatorium treatment of insured persons was provided by the taxpayer and not by the ratepayer.

Dr. Farquharson put it to the committee that they should calm their enthusiasm for extensive and expensive schemes and treatment until the experimental stage of those treatment methods had been passed. Even the best scientific opinion was at the present time in great doubt as to the effect of sanatorium treatment in doing anything more than palliating for a short time the unfortunate position of the tuberculous person. He had read only the other day a magnificent book written by one of America's greatest physicians, who had made tuberculosis a special study. His conclusion was that a tubercle-free population would be absolutely unequipped for existence in this country. If a group of twenty or twenty-five children was reared until they were of adult age under conditions which precluded the possibility of tuberculous infection, and the time came when they would have to go into the world without this security, they would inevitably succumb. The infection would be so extreme that it would quickly sweep them away. Let it be recognized that what was being done was an experimental process which should not burden the taxpayers excessively. The more he read up-to-date science, and the older he became, the more he was thrown back on the wisdom of our grandfathers and grandmothers. They exposed their children to zymotic diseases because the occurrence gave them immunity. It was part of Nature's freely given immunity to the population of this country that the small doses of tuberculous infection that we got acted as a protection to us against a more severe attack.

Colonel P. Williams could not see the objection to the amendment, which aimed merely at speeding up the laggard councils. Mr. Charles Edwards supported the amendment, which he said was no reflection whatever on those councils who were doing their duty.

Sir Kingsley Wood asked the Committee to read the clause as a whole. All the agreements already made had been most carefully examined by the Minister of Health and his expert advisers. In every one of these cases the agreement had come up to the standard laid down by the Departmental Committee of 1912, which carefully inquired into the subject, and made recommendations as to what the proper standard should be. The second class of case—where a county authority had not made adequate arrangements—was equally provided for in the bill under Subsection (2). There was the further penalty upon backward councils that if they did not, after direction by the Minister, come up to the standard, they would be penalized throughout the course of whatever treatment they were directed to make. Unless a council was prepared to make arrangements with an insured person the Minister would not approve of an agreement. As regards expense, a million pounds was now being paid by the ratepayers and one million two hundred thousand pounds by the taxpayers.

Mr. W. Carter demurred altogether to the assertion by Sir Kingsley Wood that, in round figures, two million pounds represented a large sum for purpose. They had to reflect on the terrible loss of life from the disease. Mr. Tyson Wilson was afraid that the statistics with regard to the people who had been treated in sanatoriums during the last twenty years would show that a very large number had died of the disease within two years; therefore money ought not to be spared in trying to find a cure, but they ought, in the first instance, to invest money in research work. He supported the amendment. Mr. Charles White submitted there was too much legal phraseology and ambiguity in the drafting of the bill.

Dr. Elliot said he would vote for the bill as it stood because the essential thing was to get the co-operation of the local authorities. These bodies were more closely in touch with local conditions and local opinion than the House of Commons could possibly be. It would be the greatest injury to the public health if it came to be supposed that a policy was being dictatorially settled at Whitehall and forced upon a reluctant set of local authorities. He thought that in this case the local authorities would have to be left to work out their own salvation under the supervision, but not at the command, of the Ministry of Health.

The amendment was rejected by 23 votes to 10.

Sir R. Thomas moved to leave out the words:

"or under an agreement approved by the Local Government Board, the Minister of Health, or the Welsh Insurance Commissioners, as the case may be,"

and to insert instead the words:

"approved by the Local Government Board or the Minister of Health, or, in the case of Wales, under an agreement made with the King Edward the Seventh Welsh National Memorial Association and approved by the Welsh Insurance Commissioners or the Minister of Health."

His object was to get the Welsh National Association acknowledged by the bill. They had in Denbighshire one of the finest blocks of buildings in the country for the treatment of tuberculosis, and the work being done in the institution was wonderful.

The amendment was accepted.

Sir H. Nield moved to add at the end of Subsection (2) the words:

This Subsection shall not apply in the case of any council which at the date of the passing of this Act is deemed to have made adequate arrangements as aforesaid, and which fails to continue to make such arrangements by reason only of the withdrawal of, or diminution in, the rate of contribution made from the Exchequer before the passing of the Act to the councils of county and county boroughs in aid of the treatment of tuberculosis."

The object was to protect local authorities against any possible withdrawal of the Exchequer grant. Sir A. Mond accepted the words as making an ultra-precautionary provision.

Clause 2 as to approval of institutions was passed without discussion.

The next discussion was on Clause 3, the text of which stood as follows:

The powers of a county or county borough council in relation to the treatment of tuberculosis (other than the power of raising a rate or of borrowing money) may be exercised through a committee of the council or through a subcommittee of any committee, and the council and, subject to any directions of the council, the committee may appoint as members of the committee or subcommittee, as the case may be, persons (including members of insurance committees) who are not members of the council, being persons specially qualified by training or experience in matters relating to the treatment of tuberculosis, but not less than two-thirds of the members of such committee or subcommittee shall consist of members of the council.

Mr. Thomson moved to leave out the word "may" in order to insert "shall," and Lieut.-Colonel Sir A. Warren strongly supported the amendment. Dr. Farquharson thought the local authorities should be trusted to use their own discretion, and Mr. T. Wilson, on behalf of the Labour Party, said they were prepared to leave the matter as it stood.

The amendment was negatived.

Clauses 4, 5, 6 and 7 were passed without discussion.

Mr. T. Wilson next moved the following new clause, which was accepted by the Government and by the Committee:

Without prejudice and in addition to any other power, whether under this or any other Act, every council of a county or county borough shall have power to make such arrangements as they may think desirable for the after-care of persons who have suffered from tuberculosis (including persons for the time being insured under the National Health Insurance Act, 1911, as amended or extended by any past or future enactment), and the foregoing provisions of this Act relating to committees and joint committees shall extend accordingly as though in those provisions the expression "treatment of tuberculosis" included such after-care.

Dr. Raw formally moved a new clause in order to point out that seamen arriving at any port in this country were no longer able to receive sanatorium benefit under the Insurance Act.

Sir Kingsley Wood gave an assurance of the sympathy of the Minister, and the clause was withdrawn as being out of order.

The bill was then passed to be reported to the House of Commons.

The report stage of the bill was taken in the House of Commons on April 25th. Major Henderson moved a new clause (similar to that submitted by Dr. Raw in Grand Committee) to bring the Seaman's National Insurance Society within the scope of the bill, explaining that the object was to obtain an assurance from the Minister of Health that the Government would take up this matter in the House of Lords. Sir A. Mond gave this undertaking and the motion was withdrawn. The bill was then read a third time and passed.

Tuberculosis Treatment Expenses.—In Committee of Supply, on April 14th, Lieutenant Commander Hilton Young (Financial Secretary to the Treasury) moved the resolution required to enable payment to be made by the Ministry of Health for the treatment of tuberculosis where it was not done by local authorities, the money in due course to be recovered from such authorities. The resolution was agreed to.

Ministry of Health Draft Orders.—Sir Alfred Mond moved, on April 14th, "That the Ministry of Health (Factories and Workshops, Transfer Powers) Draft Order, presented the 28th day of February, 1921, be approved." Dr. F. E. Fremantle recalled that the scheme under which the Ministry of Health was formed was threefold: First, it contained provisions for various services; secondly, certain powers were reserved that might be added afterwards; and, thirdly, there was a general power for taking over other health powers. Amongst the powers that were excluded were vital ones, at present administered by the Home Office. It was a very serious and sound criticism of the Ministry of Health in its original constitution that the whole question of health in the factories, as administered by the Home Office, should have been omitted. However, a very small contribution in the right direction was made by this Order. Incidentally, he said that it was extremely difficult to keep watch on what went on in the House. It was with the greatest difficulty that he obtained a copy of this order, which transferred the following powers and duties of certain sections of the Factories and Workshops Act, 1921: Section 61 (Prohibition of employment of women after childbirth), Sections 97 to 100 (Provisions relating to bakehouses), Section 109 (Making of wearing apparel where there is scarlet fever or small-pox), and Section 110 (Prohibition of homework where there is infectious disease). They were all pertinent to the Ministry of Health; but he felt sure that the House would agree with him that they were small details entirely out of relation to any comprehensive conception of the duties of the Ministry of Health as regards the health of the people in their working hours. He hoped, therefore, that this would be only a prelude to the natural transference by slow but steady steps to the Ministry of factory and workshop health matters. He hoped that when Sir A. Mond was familiar with the affairs of his office he would not think it adequate to rise in his place and bow his head, but would explain orders that he submitted to consideration. The question was then agreed to.

National Health Insurance: Medical Benefit.—In reply to Sir Croydon Marks, Sir A. Mond said that the number of persons in England and Wales entitled to medical benefit under National

Health Insurance was approximately 12,750,000. Figures were not available of the number of insured persons actually receiving (*a*) medical treatment, (*b*) cash benefits in particular weeks. The total number of insured persons in England and Wales who were receiving treatment for tuberculosis in sanatoriums or other institutions was 8,922 on March 1st, 1921, and 8,754 on March 1st, 1920. The number of non-insured persons receiving such treatment on those dates was not available, but the number of beds available for non-insured and insured persons in approved institutions for the treatment of tuberculosis was 17,894 on March 1st, 1921, and 16,432 on March 1st, 1920.

University Grants for Scotland and Wales.—Sir R. Thomas asked, on April 19th, whether the President of the Board of Education was aware that the total increase in the annual grants to the Scottish universities for the year 1920–21 amounted to £81,000, and in the case of the three constituent colleges of the University of Wales to £16,000, and that, taking population as the basis of comparison, the increase in the case of Scotland was about 96 per cent., and in the case of Wales only 44 per cent.; and that in the case of Scotland the increase was unconditional, but in the case of Wales was an advance by the Treasury equivalent to a penny rate to be raised by the Welsh county councils; whether the Minister was aware that the university building grant in the case of Scotland was £248,000, and in the case of Wales £50,000, and that on population basis Wales was entitled to £89,200. Sir H. Craik asked whether the Minister for Education knew that the grants for the Scottish universities were to a very large extent statutory grants made in return for revenues belonging to the university and commuted under the Act. Lieutenant Commander Young replied that the increased grants were as stated, but a further sum of about £24,500 was due to the University of Wales, under the pound for pound arrangement, and would be paid on certification of the levy of the penny rate. The percentage increase over the previous year would then be: Scotland 96 per cent. and Wales 111 per cent. He was not sure Sir R. Thomas calculated the university building grant in Scotland as £248,000. No building grants had been made since the present University Grants Committee was appointed in 1919, and returns relating to earlier dates suggested a figure very much lower. As regards the suggestion of injustice to Wales, Lieutenant Commander Young said the assistance given appeared to be, if anything, more favourable than that given to Scotland. On the basis of the number of full-time students in residence, the grant for students in Wales was more than twice the Scottish figure.

The Registration of Nurses.—Mr. Grundy asked the Minister of Health, on April 19th, whether the important work of the General Nursing Council for England and Wales was in charge of a junior official of the Ministry of Health who knew nothing of medicine or nursing, and who could not appreciate professional points which had to be adjusted between the three statutory authorities in the United Kingdom; and whether he would take whatever steps were necessary to avoid rules being forced on the English Council which might result in the boycott of the register when opened. Sir Alfred Mond replied that Mr. Grundy was misinformed. Questions relating to nurses' registration were dealt with in the ordinary course of departmental business by administrative and medical officers of appropriate standing, and subject to the Minister's instructions. The General Nursing Council had only been required to make such alterations in the rules as were necessary to bring them into conformity with the Act or to give effect to the intention of Parliament. Mr. F. Hall, on April 20th, asked whether the English Act for the registration of nurses, passed in December, 1919, had not been carried into effect, and that efforts were being made departmentally to coerce the General Nursing Council of England and Wales to agree to provisions incorporated in the rules framed under the Scottish Act of which the Council did not approve; and whether such provisions would have the effect of reducing its authority in certain important directions to that of a recording body under the Scottish Board of Health. Sir A. Mond said that Mr. Hall was under a misapprehension. The General Nursing Council submitted a rule purporting to give them a discretion to refuse to admit to their register nurses already on the Scottish and Irish Registers. He was advised on the highest authority that this was *ultra vires*, and he was bound to ask the Council to amend the rule; subject to the submission of an amended rule affording reciprocity provisions he would sanction at once the rules for the admission of existing nurses.

Medical Needs of the Auxiliary Division in Ireland.—The Irish Attorney-General stated, on April 14th, that the Auxiliary Division was not provided with its own special medical transport and that ambulance and other necessaries of medical equipment were borrowed from the regular forces, as and when required—an arrangement which the authorities deemed satisfactory. Lieut.-Colonel W. Guinness asked whether notice had been taken of the sufferings of many of the auxiliaries who had been wounded in the Longford Camp, and whether the Chief Secretary would consult the Director of Army Medical Services in Ireland as to what steps had been taken so that men suffering from grievous wounds should not be left lying in the open without proper attention, as had often happened. Mr. Dennis Henry promised to bring the matter before the authorities. Earl Winterton said that at Longford Camp men had been left lying about for twenty-four hours, because no proper provision was made for them, and because it was not the duty of the army authorities to convey them to the hospital. Mr. Henry repeated that the matter was receiving attention.

Pensions Appeal Tribunals.—Sir Gordon Hewart, in reply to Mr. T. Griffiths, said that the Act of 1919 provided that a Pensions Appeal Tribunal should consist of one legal representative, a disabled officer or a disabled man, and a duly qualified medical practitioner. He was informed that an ex-commissioned officer never sat as service member on a tribunal to hear appeals of ex-service men and non-commissioned officers. Representations as to the desirability of including industrial women in the membership had been received, but it was not considered desirable to increase the personnel as suggested.

Permanent Pensions for Disabled Men.—Mr. McLean asked, on April 14th, whether the Pensions Minister had received any representation from any Local Pensions Committee to the effect that when a man had been under treatment for two years he should be granted a permanent pension (or sooner) if the decision of the medical man was that the disability or disease was likely to be permanent. Mr. Macpherson said that under existing practice award of pension was made permanent when the medical advisers of the Department were able to certify that the disablement had reached the final and stationary condition. Of late he had received many representations in favour of the award of permanent pensions within specified periods, and he was now having the question thoroughly examined. The matter was one of great complexity, which required very careful consideration in the interests both of the State and of the disabled men.

Disability Pensions.—Sir T. Bramsdon asked, on April 22nd, whether the Pensions Minister was aware that, up to June, 1917, many disabilities were looked upon as not attributable to the service, but subsequently medical opinion modified, and these disabilities were now considered in some cases to be attributable to or aggravated by the service, and whether, as a matter of equitable treatment, all pensions could be reviewed according to the present policy of the Ministry. Mr. Macpherson said that pensions appeal tribunals had been established to deal with appeals against the decision that a man's disability was neither caused nor aggravated by his service. Any man invalided in the earlier years of the war with a disability held to be not attributable to service, and who had not yet appealed, might now put forward his claim through the Local Pensions Committee, and it would be reconsidered by the Ministry before submission to the tribunal.

Pensions Appeals Delay.—Sir Gordon Hewart, in answer to Mr. Davies, on April 21st, said that there were about 8,500 appeals waiting to be dealt with by the Pensions Appeal Tribunals established by the War Pensions Act of 1919. The twelve tribunals now sitting dealt with over six hundred appeals per week. Additional tribunals were being set up.

Light Metal Limbs.—Major Cohen, on April 21st, asked the Minister of Pensions the price of the Government's new light metal limb, both as supplied by Messrs. Vicars and also when completely fitted with buckets, etc. Mr. Macpherson said it would not be expedient at this stage to publish details of the contracts placed with the limb makers in connexion with the light metal limb. He could state, however, that for the first issue of five hundred the total cost per limb would not exceed £30; the limbs were provided free to the pensioners.

Pneumonia Attributable to Naval Service.—Sir T. Bramsdon asked, on April 20th, whether, in view of the stringent medical examination applied to new entries to the Navy in peace time, which should make attributability more pronounced in the case of death or invaliding, some form of independent appeal board would be substituted to deal with any post-war cases in dispute, inasmuch as pneumonia, for instance, might be clearly due to the naval service, but there was no machinery for recording the circumstances attending each case, nor for bringing them to the notice of the medical officers who had to decide this important matter. Mr. Amery replied that it was not considered that such a board was necessary. From the time that a man entered the Navy until he left it a careful record was kept of his medical history, and before he was invalided for injury or disease all the details were fully known to the Board of Survey, who definitely gave their opinion as to attributability. Such a disease as pneumonia might well, in exceptional circumstances, be definitely given as attributable to service.

Anatomical Studies.—Sir H. Brittain asked, on April 20th, whether the Minister was aware that there was the greatest difficulty with regard to the proper prosecution of anatomical study in this country, and that a large number of British medical students were forced to prosecute or complete their studies in foreign hospitals or universities; whether this difficulty was mainly due to the inadequate supply of dead bodies for anatomical studies; and whether he would appoint a Select Committee to inquire into the matter. Sir A. Mond replied that, although it was the case that students had occasionally gone abroad to seek facilities to study anatomy, the difficulty at home had been remedied now by action taken by his predecessor; there was still a shortage in the case of certain provincial schools, but this was being remedied.

A Caravan Settlement.—Mr. Stuart asked, on April 13th, as to the reply of the Minister of Health to the petition of the Moreton District Council upon the subject of the caravan settlement in that and adjoining parishes; whether an expert in the Ministry of Health has reported upon the settlement; whether it contains about 1,100 caravans, many of which had merely bogus wheels and pretended to be movable residences, whereas they were not so; whether many tents were added

during the summer months, increasing the population by many thousands; and whether the conditions (as alleged in detail by Mr. Stuart) were such as to create a great danger. Sir A. Mond said he had received the report from a medical officer of the Ministry of Health, which was substantially in accordance with the statements of fact in the question. He was advised that the local authority had already sufficient powers to deal with the serious factors in the situation and he was in touch with them. Mr. Stuart inquired whether there was any way of limiting this evil in view of its alarming increase every year. The Minister repeated that the local authorities had full powers to deal with the matter. Mr. Stuart put it that an epidemic of typhoid fever was almost certain to arise, but Sir A. Mond said that it was the business of local authorities to see that these did not occur. Mr. Stuart said he was informed that the occupiers of caravans came to these places only in summer, and that the local authorities said they had no power to deal with them. Sir A. Mond rejoined that his advisers held to the contrary, but that if he found that the powers were inadequate he would go into the matter.

Harrow Medical Officer's Salary.—Mr. Mosley asked, on April 20th, whether the Minister of Health had requested the Harrow Urban District Council to raise the salary of their medical officer from the agreed sum of £180 per annum *plus* £20 allowances, to the sum of £230 per annum, *plus* £20 allowances. Sir A. Mond said that the approval of the Minister of Health had been asked for the appointment of a new medical officer of health at Harrow at the pre-war salary of £180 per annum *plus* allowances. The Urban District Council were informed that the salary was too low. The appointment and rate of salary were, however, sanctioned, as the council themselves contemplated an increase at the end of three months. On the application of the council an increase to £230, *plus* £20 allowances, was subsequently sanctioned.

THE BUDGET.

SELDOM during the past few years has a Budget been so effectively shorn of interest by anticipation or previous official announcement. Mr. Chamberlain publicly stated in Birmingham last February that the excess profits duty would be terminated and that no considerable change would be proposed in the income tax; and, as few would be sufficiently optimistic to expect any reduction in such duties as those on tea, tobacco, or spirits, in present circumstances, the main features of the new Budget have since then been regarded in the light of foregone conclusions.

The only surprise in his speech was that relating to the issue of a new loan to induce holders of bonds, the redemption of which is impending in the near future, to convert them into long-dated securities instead of claiming the redemption of their bonds, and thereby driving the Government to the money market for temporary loans, which would add to the already too heavy floating loans, aggravate the serious difficulty of the money market, and delay the hoped-for return to a lower bank rate and healthier conditions of industrial credit. The terms of the conversion loan seem to be sufficiently generous to ensure the attainment of its object.

Most of the fiscal controversies of the past few years have centred round the excess profits duty. The professional man, as such, is not directly concerned with that tax, but there is something to be said from his standpoint, for it is clearer than it ever was that a burden taken from the shoulder of one taxpayer implies either an additional burden on another taxpayer, or, as in the present instance, the retention of his burden without the relief that otherwise might have been afforded. A system of taxation should, if possible, comply with two main conditions: it should be fair as between one citizen and another, and it should inflict the minimum of harm on the citizens as a whole. The excess profits duty—or some modified form of it—is justifiable on grounds of equity in many cases, where an income greatly in excess of the pre-war income is still being enjoyed, but most if not all of the authorities seem to be agreed that its effect on the nation's industrial and commercial well-being is so harmful that it must go. Unfortunately, in this imperfect world, the two conditions are impossible of simultaneous fulfilment, and the man who is now enjoying an income which the war has helped him to double or more, is now freed from the special burden of the excess profits duty, not merely, or mainly, because that burden is unfair, but because the unfettered investment of his surplus income is desirable for the building up of industrial enterprises.

In this connexion the remarks of the Chancellor with regard to the operation of the three years' average are of interest. During the war provisions were very properly inserted in the Acts to give relief to those taxpayers whose incomes had fallen owing to the war. That relief operated by suspending the three years' average, and it now appears that there is some doubt as to whether the law officers of the Crown are right in holding that that relief was abolished for 1920–21 and future years. The point is important, because if the relief does still operate the result would be that concerns which made large profits during the war would now escape their fair payment of income tax by substituting for the three years' average the profits of the comparatively unprofitable year 1920. For these reasons the course proposed—namely, to deal with the question by Act of Parliament instead of leaving it to the protracted and uncertain arbitrament of the courts, appears right and proper.

The Budget has taken precedence of the second reading of the Revenue Bill, the intention of which is to effect certain changes in administration and in the average basis of assessment as for the financial year 1922–23 and future years. There has been considerable discussion in the daily press as to the wisdom or unwisdom of the administrative changes proposed. On the one hand the proposals are supported as merely giving legal sanction to the existing practice in accordance with which the greater part of the assessing work is performed in most places by the inspector of taxes, on the other hand the proposals are attacked as giving that official an authority and opportunity for harassing the taxpayer which he should not be allowed to obtain. A reference to the report of the Royal Commission on Income Tax shows that the Revenue Bill is in the main intended to embody the unanimous views of the members of that Commission, and it is perhaps wise to suspend judgement until the bill has been discussed in Parliament.

After all, the dominating factor in the situation is that the standard rate of income tax remains at 6s. in the £, and a close scrutiny of the Budget figures suggests little hope of its early reduction. At the moment the demand for economy is loud and insistent, and it is well that it should be so; but there is a constant parliamentary pressure for schemes of social betterment which goes far to nullify efforts to secure a smaller national expenditure. On the revenue side, Mr. Chamberlain deliberately omitted from his anticipations any receipts from the German Indemnity, which is earmarked against repayment of national debt; but taking into account, on the other hand, the fact that before long some arrangement must be arrived at with the United States as to the accrued but postponed interest on our debt to that Government, it requires more optimism than we can summon to our aid to anticipate much relief in taxation through Germany meeting her obligations to this country, and thereby reducing the interest payable on our own National Debt.

To the professional man the Budget appears to be without any very distinctive features, and leaves him very much as it found him, thankful that it is no worse, but with little hope for any early relief from a burden of taxation which can be borne only by great personal sacrifice.

THE Committee of Livingstone College recently accepted with much regret the resignation of Dr. Loftus E. Wigram of his post as principal of the college, and appointed as his successor Dr. Tom Jays, who has served since October, 1919, as vice-principal.

THE report of the Carnegie United Kingdom Trust for 1920 contains an account of the many-sided activities of this body, which range from the publishing of music to the provision of play centres for children. In connexion with the valuable work which is being continued in regard to the provision of public libraries, £500 was given to the College of Nursing for the formation of a nurses' library in their new headquarters in Cavendish Square. A grant of £40,000 is to cover the lease, equipment, and sinking fund charges of No. 117, Piccadilly, which is the house of the London Central Institute for Infant and Child Welfare and its constituent child welfare societies. Of the six model infant and child welfare centres for which grants had been promised, the Motherwell centre, the report states, was the only one actually in course of erection. Among the miscellaneous grants was one of £1,000 a year for five years to the National Institute of Industrial Psychology, which is complementary to the official body, the Industrial Fatigue Research Board, and is under the direction of Dr. C. S. Myers, F.R.S.

England and Wales.

DINNER TO MR. R. A. BICKERSTETH, LIVERPOOL.

A LARGE number of his professional colleagues and friends assembled on April 20th to do honour to Mr. Robert A. Bickersteth, M.A., M.B., F.R.C.S., on the occasion of his resignation from the position of senior surgeon to the Liverpool Royal Infirmary. The success of the dinner was due to the efforts of Mr. Frank Jeans. Mr. H. Wade Deacon, chairman of the committee of the Royal Infirmary, presided, and after the loyal toasts had been honoured, Dr. Richard Caton, senior consulting physician, proposed the health of the guest. Dr. Caton said that the name of Bickersteth was a household one in the annals of the Royal Infirmary, and he hoped that in the future the name would again appear among those of the surgeons of the infirmary. He trusted that their guest would enjoy many years of happiness in his retirement to the north of England. Mr. Frank T. Paul, consulting surgeon, mentioned especially Mr. Bickersteth's work in urinary surgery, and that, as a major during the great war, Mr. Bickersteth devoted his attention to the wounded at Fazakerley Hospital, relinquishing his private practice in order to do so. Mr. F. Jeans, assistant surgeon to the Royal Infirmary, who worked with Mr. Bickersteth, gave a delightful account of the harmonious relationship of his staff. Mr. Keith Monsarrat (Liverpool Northern Hospital), Mr. G. P. Newbolt and Mr. Douglas Crawford (Royal Southern Hospital) testified to the character and skill of their colleague, and congratulated him on his retirement at an age when he could look forward to many years of healthful activity. The chairman of the infirmary emphasized especially the great value of the tact and judgement that Mr. Bickersteth was able to render in the management of hospital affairs. Mr. Bickersteth, in reply, said that he was gratified beyond expression to know that in leaving Liverpool he had left behind him a secure place in the esteem of his professional brethren.

THE LATE DR. ARNOLD JOHNSTON OF LEICESTER.

Many professional and social friends of the late Dr. Thomas Arnold Johnston, assistant physician and pathologist to the Leicester Royal Infirmary, were present on April 21st at the unveiling of a memorial tablet commemorating his work at the infirmary. Mr. N. C. Ridley, M.B., F.R.C.S. (ophthalmic surgeon), senior member of the honorary medical and surgical staff of the institution, who performed the ceremony, said that the tablet commemorated the sacrifice of a life freely given in the sacred cause of humanity, offered at the call of duty, in fighting a subtle and insidious foe in the laboratory, so that knowledge might be gained to enable the human race more effectively to withstand the attacks of disease. "Arnold Johnston," Mr. Ridley continued, "was a quiet modest man, albeit of a cheery and lovable disposition, who never spared himself when there was work to be done. He knew quite well the risks he was running, but although on two previous occasions he had been laid up with the same infection, he returned to his work and unfortunately contracted the disease a third time; he eventually succumbed after two years of great suffering, mitigated indeed by the faithful care and attention of a devoted wife and loving mother. As the senior member of the staff and also because possibly I knew him best, I have been asked to unveil this tablet to his memory, to show to future generations that the Leicester Royal Infirmary appreciates her sons and laments a young and promising life cut untimely short. As Horace most aptly expresses it:—

> Quis desiderio sit pudor aut modus
> Tam cari capitis!"

The inscription on the tablet is as follows: "To the memory of Thomas Arnold Johnston, M.D., Honorary Assistant Physician and First Pathologist to this Infirmary. Obiit 4th February, 1918."

VITAL STATISTICS.

The Registrar-General announces that the provisional figures of births registered during the first quarter of 1921 show a decline of over 61,000 when compared with those of the corresponding period of 1920. Compared with the first quarter of 1914, however, the drop in numbers is under 8,000. Excluding the war years the births are the fewest recorded in the first quarter of any year since 1872. The provisional rate per 1,000 living is, with the exception of the war years 1916–19, the lowest ever recorded for any first quarter. The deaths registered also show a decline in numbers from the very low record of 1920, and are the smallest in number registered in the first quarter of any year since 1868. The provisional rate is the lowest ever recorded for any first quarter. The natural increase by excess of births over deaths was over 80,000, as compared with 133,000 in the March quarter of 1920 and 73,000 in 1914. The infant mortality was 101 per 1,000 births.

Ireland.

THE NEW ULSTER PARLIAMENT.

Selection of Unionist Candidates for Queen's University of Belfast.

AT a meeting of the Queen's University Unionist Voters' Association, held on April 20th, in the Minor Hall, Y.M.C.A., Belfast, the following four candidates were selected: John Campbell, M.A., M.D., F.R.C.S.Eng., LL.D.(Hon.); R. J. Johnstone, B.A., M.B., F.R.C.S.Eng., Professor of Gynaecology in the Queen's University; H. S. Morrison, M.D., L.R.C.S.I., H.M. Coroner Coleraine District; and John H. Robb, B.A., B.L., a member of the North-East Circuit, author of some legal works, and well known in the North of Ireland.

Mr. Campbell is senior surgeon to the Samaritan Hospital for Diseases of Women, Belfast, and is well known as a consulting and operating gynaecologist; he was chairman of the old Royal University Graduates' Association, and is Chairman of Convocation of the Queen's University; he served in France for a time as chief surgeon of No. 5 British Red Cross Hospital, and was adjutant and second in command of the Queen's University Veterans Volunteer Corps. Professor R. J. Johnstone is gynaecologist to the Royal Victoria Hospital, Belfast; he has been for twelve years a member of the Council of the British Medical Association, and was actively engaged in the negotiations between the Government and the profession in connexion with the Insurance Act; he has been chairman of the Irish Medical Commitee for the past six years; he is a member of the Council of the British Hospitals Association and was chairman for two years of the Hospitals Committee of the British Medical Association, and is one of the three medical members of the Nursing Council for Ireland. He served during the war as one of the surgeons of the U.V.F. Hospital. Dr. H. S. Morrison was put forward by the Medical Association of the County of Londonderry, and his nomination was heartily approved of by the Queen's University Unionist Voters' Association. For thirty years he has been an active supporter of the Ulster Unionist policy, and he is chairman of the South Londonderry Unionist Association, and of the County Londonderry Branch of the Irish Union Alliance; he is secretary of the Irish Medical Association of County Derry and has held many posts of public utility; he has retired from medical practice but still holds the coronership. Mr. Robb is a member of a medical family; his personal qualifications entitled him to the selection of the association; his claims were strengthened by his family record; his father (the Rev. J. Gardner Robb, D.D., LL.D.) was one of the early scholars of the old Queen's University, and his three brothers and himself have all passed through the portals of its successors: Dr. Gardner Robb, Medical Superintendent, Purdysburn Fever Hospital; Lieut.-Colonel J. J. Robb, I.M.S.; and Captain Campbell Robb, R.A.M.C., P.M.O., Egyptian State Railways. All were well-known athletes in their day.

POOR LAW MEDICAL OFFICERS AND LOCAL GOVERNMENT RETURNS.

The "department of local government, Dáil Eireann" over twelve months ago ordered Irish Poor Law medical officers to discontinue sending, amongst other returns, Form L to the Local Government Board (Ireland). Dr. L. Rowan, Kildare, one of the medical officers who has carried out the instructions of the Dáil Eireann local

government has written to the board of guardians, stating:

"I should be glad if you will communicate to the Board the fact that on the 10th inst. I received a communication from the Local Government Board (Ireland) in which they repeated the statement that the directions of your Board (*re* the September report) was illegal and invalid. They also express the opinion that resignation by me of my position as medical officer would have been in the circumstances 'the honourable way out.' They added that they had now decided to take a less drastic course than dismissal, and had directed their solicitor to apply in the High Court of Justice for a writ of mandamus to compel me to send in my report, all costs to be payable by me. I shall be glad to learn of and to follow any suggestion or procedure your Board may desire to adopt at this stage."

The board of guardians (Naas, co. Kildare) made an order that they would stand by Dr. Rowan and would indemnify him against any loss he may sustain arising out of any action taken by the "English" Local Government Board.

In connexion with this matter deputations from the Irish Medical Association and Irish Committee of the British Medical Association waited on the Vice-Chairman and Medical Commissioners of the Local Government Board to point out the difficulties in which medical officers in many unions were placed by receiving contradictory orders from the Local Government Board and their boards of guardians. In some instances they were placed in actual danger if they continued to obey the regulations of the Local Government Board. It appeared to the deputation that it was unreasonable to expect medical officers to jeopardize their salaries, or possibly their personal safety, by obeying the regulations of the Local Government Board in cases in which the Government no longer contributed to their salaries. The deputation failed to see why medical officers had been singled out of the whole class of officials with threats of dismissal for failure to obey the orders of the Board. The deputations also drew the attention of the Local Government Board to the fact that in several unions medical officers had received no salaries for over twelve months. Members of the deputation expressed the opinion that there was very little hope of such doctors being paid their salaries until legislation was introduced amending the Criminal Injuries (Ireland) Act, 1920, which provided for the attachment of Poor Law medical officers' salaries to meet the awards made for malicious injuries, including those committed by the Crown Forces. It was also pointed out that the Government had made no effort to provide medical treatment for the necessitous poor whose plight would be infinitely worse had not the Irish medical profession tried to place its services gratuitously at their disposal.

At a meeting of the County Limerick Medical Committee, held on April 16th, the following resolution was unanimously adopted:

> That the order, regarding Form L, of our Board of Guardians be complied with, and that in future it be sent to them alone. That the Honorary Secretary is directed to send copies of this resolution to secretaries of County Borough and Local Medical Committees.

National University of Ireland.

At a special meeting of the Senate of the National University of Ireland, held on April 19th, with Dr. Denis J. Coffey, Pro-Vice-Chancellor, in the chair, Dr. Michael F. Cox proposed a motion recording the loss sustained by the university in the death of the Most Rev. William J. Walsh, D.D., Archbishop of Dublin, the first Chancellor of the University. The resolution, which was unanimously adopted, recorded that it was in the main to the efforts of Dr. Walsh that the university owed its foundation, and that its success in surmounting the difficulties of its early years was largely due to his wise guidance.

Scotland.

Glasgow Post-Graduate Medical Association.

A comprehensive course of instruction for medical practitioners, extending from May to October, 1921, has been arranged under the auspices of this association. The hospitals taking part in the scheme include the Glasgow Royal Infirmary, the Western Infirmary, the Royal Hospital for Sick Children, the Royal Maternity Hospital and most of the other hospitals in Glasgow, the Glasgow Royal Asylum, and the consumption sanatoriums for Scotland, Bridge of Weir. The classes have been arranged so that a practitioner may, if he so desires, occupy the greater part of each day in attending the classes and demonstrations of the course. In order to meet the needs of young graduates and others who may wish to obtain a closer acquaintance with hospital work in one or other of its branches, arrangements have been made by which a limited number may become attached to wards or out-patient departments as clinical assistants for definite periods, working under the direct supervision of the physician or surgeon in charge, and carrying out such detailed investigations as directed. A young graduate who wishes to obtain special knowledge of children's diseases, mental diseases, tuberculosis, venereal diseases, or other subjects, would find such training valuable. The post-graduate courses are conducted quite independently of the undergraduate courses, and a practitioner may enrol for one or other of several classes, and may attend for one or more months as he desires. Any further information may be obtained on application to Dr. A. M. Kennedy, secretary, Post-Graduate Medical Association, The University, Glasgow.

Advisory Committee on the Welfare of the Blind.

The Scottish Board of Health has appointed a committee to advise it on matters connected with the care and supervision of the blind, including any question which may be specially referred to the committee by the Board. There are fifteen members of this advisory committee, and it is rather surprising to find that only one of them is a medical man—Dr. George Mackay, P.R.C.S.Edin., than whom, of course, no better single selection could have been made. The secretary to the committee, to whom all communications should be forwarded, is Mr. W. R. H. Johnston, Scottish Board of Health, 125, George Street, Edinburgh.

Correspondence.

THE SITE OF OPERATION FOR EMPYEMA.

SIR,—May I venture to raise the question of the point of election in operation for empyema?

At a V.A.D. hospital during the war I was very much struck with the number of cases of lingering empyema. They were practically all alike in one respect, showing scars of successive operations of which the earliest was at the back.

Lately there has come under my care another case in which intermittent discharge is still taking place from the last operation wound. It is like all the others, presenting three scars, the first well to the back, the second about the mid-axillary line, and the last—where I think the first should have been—between the mid-axillary and nipple lines.

I am convinced that if the first operation had been performed at the last-named point this man would have been spared weeks of protracted suppuration together with two further operations.

In my student days in the eighties we were taught that the compressed lung lay at the back, and that in expanding after operation it gradually covered the inner surface of the ribs from behind forwards, the last portion to come in contact with the chest wall being towards the front. A posterior opening was therefore covered by the advancing lung while pus still remained in front, and drainage was thus interfered with; or if the opening were made too low the rising diaphragm might cover and obstruct it. Of course there are many cases in which the presence of adhesions may localize the collection of pus in any direction, but this was the teaching in respect of ordinary uncomplicated empyema, especially in children.

It is well summarized in Erichsen's *Surgery*, eighth edition, vol. ii, p. 701, where John Marshall is fully quoted in support of the anterior opening, the conclusion being:

> "The space between the fifth and sixth ribs, an inch to an inch and a half in front of the mid-axillary line, will probably be the best in most cases."

I remember well the almost uniformly successful results of operation at this point both at St. Thomas's and at the Victoria Hospital for Children, Chelsea.

I was surprised to see these cases of posterior opening, until, in a modern *System of Surgery*—Burghard's, 1914—I found the posterior opening strongly supported (vol. iii, p. 711) by Sir Rickman Godlee, who says:

"I have no hesitation in recommending a posterior opening both on theoretical grounds and as a result of experience, the best place being, in my opinion, the region of the ninth or tenth rib, not far from the scapular line," and goes so far as to add: "I have often had to make a posterior incision when a lateral one has failed to effect a cure, but *never to make a lateral one when a posterior one has proved inefficient.*" (The italics are mine.)

An old teacher of mine used to say that the opening of an empyema behind the mid-axillary line should be made a criminal offence.

Which of these teachings should we follow? It is a point which experience should have decided, and I shall be glad to learn what the decision is.—I am, etc.,

Bromsgrove, April 22nd. H. CAMERON KIDD.

THE SCIENCE OF ETIOLOGY, OR THE NEW EPIDEMIOLOGY.

SIR,—It is very good-natured of your correspondent to remind me that the "problem of causation" is of interest to clinicians and bacteriologists; a little point like that might so easily be overlooked. One good turn deserves another, so I will "venture to remind" him that zeal on behalf of the problem of causation is an insufficient excuse for roundly asserting that epidemiologists, whether new or old, renounce the laborious accumulation of facts, and for hinting that some other persons have a monopoly of "persistent endeavour," of "well-controlled and repeated observation," in short, of all the qualities which go to make up genuine scientific work in any field.

In normal times these exaggerations are merely amusing; in times like ours, when all men seem to wish to believe that 2+2 is any number you like except 4, they are mischievous. To become a genuine bacteriologist is as hard as to acquire any other intellectual discipline; the mere patter of the subject is easily picked up. But the dullest man in the street perceives that to become familiar with the A B C of general epidemiology (quite apart from any special mathematical or statistical technique) is a laborious undertaking not to be completed in a few days. Nearly a hundred years ago Macaulay said that there were many persons "who, having read little, or nothing, are delighted to be rescued from the sense of their own inferiority by some teacher who assures them that the studies which they have neglected are of no value, puts five or six phrases into their mouths, lends them an old number of the *Westminster Review*, and in a month transforms them into philosophers."

Many of these people now seek to instruct the public in preventive medicine. What they want to be able to say is that the whole problem of disease as a mass phenomenon is reducible to the chasing of a "germ" and the discovery of a "vaccine," that the laborious accumulation—with apologies to your correspondent—of epidemiological facts and the statistical analysis of such facts are waste of energy. Of course these things *will* be said whatever we may do; nothing short of an earthquake will prevent the "medical correspondent" of at least one daily paper from announcing to the world that some old wife's tale or piece of laboratory tea-table gossip is the latest discovery of science. But for our own credit's sake we should give this "home chat" science no quarter in professional circles. It is simply not true that *any* particular school of medical investigators has a monopoly of wisdom or patent rights in the discovery of truth.

If bacteriologists have a fault—mind, I say *if*—it is that they have been a shade too complacent in accepting the homage of the man in the street or newspaper office on the look-out for a new Witch Doctor.—I am, etc.,

Loughton, April 23rd. MAJOR GREENWOOD.

THE VALUE OF THE WASSERMANN REACTION.

SIR,—Three months ago a patient came under my care with a history of having contracted syphilis in March, 1920. He had no treatment until May, when he developed a rash and a sore throat. The Wassermann reaction was then "strong positive." During the next eight months he was treated with seven injections of novarsenobenzol, combined with mercury in pill form.

In November last, he stated, the Wassermann reaction was still "strong positive." When I saw him there were no clinical signs of syphilis, but the blood serum when tested for the third time gave the same result.

Since January I have given him over four grams of novarsenobenzol with continuous mercurial treatment, and as I considered that this was a case in which the return of either a positive or a negative reaction was possible I decided to obtain the opinion of two pathologists independently. Even if they did not agree absolutely I hoped at least that they would not markedly differ. When, however, the first (1) report was "negative" and the second (2) was "doubtful strong positive," results not only dissimilar but even aggressively antagonistic, I sent further samples of the serum to three other pathologists. These reported (3) "negative," (4) "strong positive," and (5) "doubtful negative." Incidentally, I may state, I obtained a negative result by the new formalin reaction of Gaté and Papacostas. The five pathologists to whom I sent serum are all well-recognized and experienced authorities on the subject.

While one fully recognizes the value of the test, its advantages and its limitations, returns of the above kind with such divergent opinions are somewhat startling; and one wonders how often an unjust verdict is given upon an individual, and treatment or the lack of it advised, when his fate is settled solely by the report from the laboratory.

In view of these results it would be interesting to hear the views of other workers on this subject, whether clinicians or pathologists.—I am, etc.,

London, W.1., April 25th. KENNETH DICKSON.

ETHANESAL ANAESTHESIA.

SIR,—I have used this new anaesthetic, "ethanesal," in several cases since attending the meeting of the Royal Society of Medicine at which its claims to recognition were publicly advanced, and I am bound to say that so far my limited experience in its use leads me to speak favourably of it. I have not, except in the case of children, used it by the "open method." I induce with ethyl chloride, or with nitrous oxide gas (the patient having received a preliminary injection of atropine sulphate gr. 1/100), followed by ethanesal in a wide-bore Clover inhaler, and when induction is complete I pass on to ethanesal given by a "Shipway" outfit and warmed. I have found that by this method rather more anaesthetic is used than was formerly used of ether, but there are distinct advantages in respect of its after-effects to the patient.

I have on two occasions had to repeat the anaesthetization of patients who had been anaesthetized by me with similar methods by ether.

In one case the patient, a very obese lady, was anaesthetized by me for the removal of breast tumour. I used the same methods as stated above, except that ether was the anaesthetic used; she was very sick after the operation and also on the day following, and was nauseated by the taste of stale ether for several days. She was anaesthetized by me three weeks later for the complete removal of the breast, and this time ethanesal was used in place of ether. The second operation lasted more than twice as long as the first, but she was hardly sick at all afterwards; there was no prolonged nausea, and she was able to eat her breakfast next morning. When questioned as to the merits of the two anaesthetics, she was emphatic in her opinion as to the preferability of the new anaesthetic.

In the other case the patient was a boy, who was being operated upon for hypospadias. The boy was very sick after "open ether" administered by me with ordinary ether. On the second occasion I gave him ethanesal, also by the open method, and this time he was hardly sick at all, merely bringing up a little swallowed mucus.

I have given the new anaesthetic in two difficult abdominal cases, one a case of obstruction of the intestines by a band, the other a hysterectomy for fibroids complicated by multiple ovarian cysts in a patient of 62; in each case perfect relaxation was obtained, and in neither case was there any post-anaesthetic vomiting. I have administered the new mixture in two cases of piles, and in each the anaesthesia was satisfactory and resulted in good relaxation.

I think that ethanesal acts more thoroughly when administered warm, and for that reason, in the case of adults, and especially when the operation is likely to be prolonged, I use some form of "Shipway" apparatus. I have found that ethanesal is very apt to freeze on the gauze mask when administered by "open" or "perhalational" methods, and this probably accounts for Dr. Charnock Smith's inability to get good relaxation in the case he cites in your issue of April 23rd. My limited experience, in fine, does not bear out his contentions therein expressed, except in so far as the cost of the "ethanesal" is concerned, but this is of small moment where the after-comfort of the patient is concerned.—I am, etc.,

H. PINTO-LEITE,
Hon. Assistant Administrator of Anaesthetics, the Westminster Hospital, etc.

London, W., April 23rd.

SIR,—Dr. Charnock Smith, in your issue of April 23rd, says that he has had difficulty with ethanesal as an anaesthetic, but as he only cites one case, and that one induced on a CE mixture, I venture to suggest that the conclusions he draws are not quite justified. This anaesthetic requires practice just as any other, and is quite different from ether in its effects. For instance, Dr. Smith mentions using 1 oz. in five minutes. I have never used anything approaching this quantity, and nearly always find that considerably less is required than with ether. This is because the liquid is more analgesic than ether, and patients can be kept lightly under. Dr. Smith also says that ethanesal anaesthesia is too light for abdominal or rectal work. It has been given in this hospital for practically every well-known abdominal and rectal operation, including hysterectomy, cholecystectomy, colectomy, gastro-enterostomy, gastrectomy, and ileo-sigmoidostomy, and no difficulty has been experienced in obtaining absolute relaxation. I personally have known of about 500 cases which have been anaesthetized with ethanesal by myself and other anaesthetists, and have not heard of one which could not be kept under with this anaesthetic only.—I am, etc.,

C. LANGTON HEWER, M.B., B.S.
St. Bartholomew's Hospital, London, E.C., April 22nd.

SIR,—After reading Dr. C. Charnock Smith's experience in the use of ethanesal in one case, I should like to give mine in twenty-one cases. The operations have been for tonsils and adenoids, mammary and other abscesses, varicose veins, multiple extractions of teeth, fistula in ano, etc.; in the last case a little chloroform, just before the operation started, was given with the ethanesal, 1 in 32.

In all the cases I have found ethanesal less irritating than ordinary ether; there was very little mucus and salivation, and the after-effects were practically *nil*—no headache, vomiting, nausea, smell or taste of the anaesthetic. Patients who have had both ether and ethanesal say they do not mind the latter, but they do not want ether any more.—I am, etc.,

ALBERT B. COCKER, M.R.C.S., L.R.C.P.
Palmers Green, N., April 23rd.

SIR,—It is interesting, when so many investigators are engaged in working in the straight but very long road of science, that, as a report of the recent meeting of the Royal Society of Medicine shows, someone has had time and opportunity to go on a mission of discovery in the side lane of anaesthesia. The report suggests that this was not a blind alley, and that ethanesal has to a certain extent passed through the fire of use, and come out, if not pure gold, anyway a glowing piece of colour in the "anaesthetic rag-bag." As an uninterested anaesthetist, I wish to bear testimony to its value. Induction, which I obtained by the use of my percentage inhaler, was rapid when an extra strength was obtained by dropping the anaesthetic on gauze over the air pipe, and anaesthesia was easily maintained by bubbling oxygen at first through, but mostly over, jacketed ethanesal.—I am, etc.,

CHARLES T. W. HIRSCH,
Anaesthetist, Samaritan, London Temperance Hospitals.

London, S.W., April 21st.

PRURITUS ANI.

SIR,—I am in agreement with much that was said at the discussion on April 13th on pruritus ani by the Subsection of Proctology of the Royal Society of Medicine (reported in the JOURNAL of April 23rd), more especially with the statement that in the local treatment attention to cleanliness and dryness and avoiding the use of ointments and greasy preparations is of the first importance.

A point, however, which seems to have been overlooked by all who spoke on treatment is the important one of shaving away all hairs found growing around the anus and between the opposing surfaces of the hips. In some cases no hairs are found in that region, but in many where the disease exists I have found that the hairs, by occasioning irritation of the skin, were the prime cause of the itching. I instruct the patient to wash the parts with warm water and soap after defaecation; then to use a safety razor in removing all hairs, finally to douche the parts with either boric lotion or plain water or both, hot or cold, and dry carefully with a soft towel. This washing is to be carried out after every movement of the bowel, and again before retiring to rest. The shaving will require to be repeated about every ten days, and does not occasion any inconvenience. By attention to these details cures may be quickly effected in cases that have given trouble for years and after the failure of varied treatment.—I am, etc.,

D. A. MCCURDY, F.R.C.S.I.

Londonderry, April 25th.

IRRITABLE BLADDER.

SIR,—There is little doubt that in certain cases the chemical and physical properties of the urine play an important part in the causation of increased frequency of micturition. One of your recent correspondents refers to alkalinity of the urine, and I would point out that unless the indicator used be stated, or some other means of denoting ionic concentration be employed, the terms acid and alkaline are very vague. During the past two years I have titrated a considerable number of specimens of urine from various sources, and using phenolphthalein as an indicator have only on one occasion found an alkaline reaction, even after the patients had been treated with bicarbonates and citrates of sodium, although such treatment may rapidly reduce the acidity as shown by titration.

It is probable that the osmotic pressure of the urine is at least as important a factor in causation of frequency of micturition as the reaction to indicators, since the ingestion of large amounts of sodium chloride may produce irritability of the bladder. A method of treatment worthy of consideration is to impress upon patients the necessity of drinking larger amounts of water than they have previously been taking; this will frequently produce satisfactory results.

In certain cases the administration of methylene blue capsules in addition has a beneficial effect, not only on account of the medicinal properties of this drug, but also by reason of the psychological influence of the coloured urine, which makes patients realize that something is being done for them.—I am, etc.,

OLIVER C. M. DAVIS.

Bristol, April 19th.

Universities and Colleges.

UNIVERSITY OF MANCHESTER.

THE following appointments have been made: *Reader in Electro-chemistry*, Mr. A. G. Lobley. *Lecturer in Practical Surgery*, Mr. E. D. Telford. *Clinical Lecturer in Mental Diseases*, Dr. John Sutcliffe. *Lecturer in Mental Diseases*, Dr. David Orr.

A large number of French books presented by the French Government have been placed in the University library.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

AT the first summer commencements in Trinity Term, held on April 19th, the following degrees in medicine, surgery, and midwifery were conferred:

M.B., B.Ch., B.A.O.—J. A. Acheson, D. J. Browne, T. F. L. Cary, R. S. Chapman, R. H. J. M. Corbet, P. J. Healy, L. Herzenberg, Mary Horan, D. V. Latham, J. D. Leahy, P. I. Levitt, R. W. Power, E. C. Smith (B.Ch. stip. cond.), J. A. Smith, Elinor D. Stopford. *In absentiâ:* D. de Bruyn, F. Y. Pratt, R. H. Satchwell, J. B. Taylor (antea lic.).

M.D.—H. Muller.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

Honour for American Surgeons.

AT a meeting of the President, Vice-President and Council, it was unanimously resolved to confer the Honorary Fellowship of the College upon the following distinguished American surgeons: W. J. Mayo, Mayo Clinic, Rochester, U.S.A.; C. H. Mayo, Mayo Clinic, Rochester, U.S.A.; Geo. E. Brewer, New York; Geo. W. Crile, Cleveland, Ohio; Richard H. Harte, Philadelphia; W. W. Keen, Philadelphia; John M. T. Finney, Baltimore; A. J. Ochsner, Chicago. It is hoped that the ceremony will take place in the early autumn.

Obituary.

ARTHUR F. DOBBS, M.B., T.C.D.,

Athlone.

DR. ARTHUR FRANCIS DOBBS died unexpectedly on April 20th. As usual with him, he was early at work in the Military Barracks, where he complained of not feeling well and was brought home. Late in the day he became unconscious, and before the evening sun had set he had gone to his reward.

He entered Trinity College, Dublin, in the early seventies, and had had a brilliant career in the arts school before entering the medical, from which he graduated M.B., Ch.B. in 1877. After practising for some years in the Federated Malay States he started in private practice in Athlone, where in a short time he acquired a large and widely-spread practice, becoming successively civil surgeon to the military, medical attendant on the police, the post office, the Great Southern and Western Railway and to the Incorporated Society's schools. His opinion was much sought after by his colleagues, who warmly appreciated the unerring rectitude of his ethical sense, his wide knowledge of professional matters and accuracy of diagnosis, coupled with an intimate knowledge of the newer developments.

Those who knew Arthur Dobbs and who were his friends will miss much more than a genial colleague. He was descended from a race which has helped to mould the history of the country in the Irish Parliament, and which had an hereditary appanage in the borough of Carrickfergus, of whom perhaps the most distinguished member was that Francis Dobbs who occupied no small place in the ranks of the county members during Grattan's Parliament, and who is frequently spoken of in the records of the period as "Millennium" Dobbs, from a pamphlet he wrote proving the immediate imminence of the millennium, which was one of the reasons he adduced against the Union in the closing stages of Grattan's Parliament. Lecky records of him that "He was a man of respectable family and private means, of an eminently pure, gentle, honourable, and benevolent character." The words apply with equal force to his descendant, except as to the private means. Arthur Dobbs was hospitable, kindly, courteous, and benevolent, placed his best services at the disposal of the poor and needy as readily as at those of his richest clients. J. M.

Sir ARTHUR BALL, F.R.C.S.I., writes: The death of Dr. Arthur Dobbs, of Athlone, will be felt as a personal sorrow by many medical men in Ireland, and all classes, particularly the poor over a wide area in the Midlands, will truly mourn his loss. Dr. Dobbs was of the type of practitioner that is unfortunately dying out in this country—a man able to get on well with those of all classes, creeds and politics. Although working away from modern hospital facilities, he kept himself up to date by post-graduate classes and books in a wonderful manner. He was a man of considerable resources in emergencies—he had operated on a strangulated hernia successfully in a dirty cottage, with no assistance and by the light of a candle. Another instance: Called to see a poor woman far out in the country, he found her enormously distended, apparently dying from intestinal obstruction; it was impossible to get her moved to a hospital and no surgical aid was available. Instead of leaving her to die, Dobbs followed what I believe is a method sometimes carried out in cattle, and punctured the obstructed bowel through the abdominal wall in several places with a hypodermic needle and allowed the flatus to escape, with the result that the patient improved and he was able to get her moved to Dublin the following day, where the obstruction was successfully dealt with by operation. A life saved by taking a risk which most of us would have hesitated to take. Military duties during the war and the tragic state of the country since prevented him taking any rest from his work. He had on several occasions during the past year intended taking a few days' rest, but something always turned up to prevent him. Want of rest, the strain of the present troubled times caused the end, but he died, as I am sure he would have wished, at the post of duty.

DR. DAVID VALENTINE REES died at his residence at Brecon, on April 13th, aged 67. He was educated at Llandovery College and the London Hospital, and took the diplomas of M.R.C.S. in 1875 and that of L.R.C.P. Lond. in 1876. After serving as house-surgeon and house-physician at the London Hospital and junior house-surgeon to the Poplar Hospital, he commenced practice forty years ago in Brecon, where he built up a wide and influential connexion. At the time of his death he was senior surgeon to the Brecknock Infirmary, M.O.H. to the Urban District Council, and a member of the War Pensions Medical Board. During the war he served at the Penoyre (Brecon) and Builth Wells Red Cross Hospitals and did a great deal of work at the Brecon barracks in addition to serving on the local medical board. He was awarded the O.B.E. in 1919. For twenty-six years he held a combatant officer's commission in the local volunteers and their successors, the Territorials, and had attained the rank of major. He was a J.P. for the county and a member of the North Glamorgan and Brecknock Division of the British Medical Association. He is survived by his widow and one son.

DR. FREDERICK J. BURMAN of Wath-on-Dearne, whose death from injuries caused by a motor-car occurred on April 15th, was educated at Leeds. He took the diploma of M.R.C.S. in 1883, and L.R.C.P.Edin. and L.M. in 1886. He had resided in Wath-on-Dearne, and ultimately succeeded to the practice established by his grandfather and afterwards carried on by his father. He was medical officer of the Wath, Rotherham, etc., Joint Hospital, M.O.H. and medical officer and public vaccinator for Wath-on-Dearne, certifying factory surgeon, and a member of the Barnsley Division of the British Medical Association. He was also an examiner for the St. John Ambulance Association and a vice-president of the Yorkshire Branch of the Society of Medical Officers of Health. For the last two years Dr. Burman had held the position of vicar's warden at the Wath parish church. He leaves a widow and one daughter.

DR. SAMUEL WALKER, one of the oldest medical practitioners in Middlesbrough, died on April 17th, aged 77. He received his medical education at Guy's Hospital, and took the diplomas of M.R.C.S.Eng. and L.S.A. in 1870. After serving as house-surgeon at the West London Hospital and the Northampton Infirmary he commenced practice in Middlesbrough. He was a J.P. for Middlesbrough, and an ex-President of the North of England Branch of the British Medical Association. He had been a Freemason for forty years, and was the oldest past-master of the Ferrum Lodge, and in addition held high degrees in another lodge. His wife died about two years ago, but he leaves three daughters and two sons.

THE death is reported of Dr. ALFRED ERNEST W. RAMSBOTTOM, of Heilbron, Orange Free State, aged 60. He was born at Grahamstown, the son of Mr. William Ramsbottom. He received his medical education in Dublin, and took the diplomas of L.R.C.S.I. in 1882, L.R.C.P.I. and L.M. in 1883, and F.R.C.S.I. in 1896, and graduated M.D.Durh. in 1902. He practised at Fauresmith and Bloemfontein, and acted as chief medical officer of the Orange Free State forces during the Boer war. On the conclusion of peace he resumed his practice at Bloemfontein, but in recent years carried on his medical work at Heilbron. He was a member of the Orange Free State and Basutoland Branch of the British Medical Association, and held the portfolio of treasurer of the Orange River Colony from 1907 to 1910, when he was appointed the first administrator of the Orange Free State on the formation of the Union of South Africa. It was while on a visit to London with reference to post-graduate study that he was seized with illness which proved fatal.

Medical News.

THE course of lectures on pathological research in its relation to medicine commenced at the Institute of Pathology and Research, St. Mary's Hospital, Paddington, on April 28th, when Sir Almroth Wright dealt with acidosis and acidaemia, with special reference to gas gangrene, shock and scurvy. Professor Leonard Hill will lecture on May 5th, at 4.30 p.m., on capillary blood pressure and oedema. The lecture on May 12th will be given by Sir James Mackenzie, who will urge that the opportunities of the general practitioner are essential for the investigation of disease and for the progress of medicine.

THE next course of lectures by the Gresham Professor of Physic will be delivered by Sir Robert Armstrong-Jones, M.D., on May 2nd, May 3rd, May 4th, May 6th, at 6 o'clock, at Gresham College, Basinghall Street, E.C. The subject will be "Our Drinks: water, milk, wines, ales, and spirits." The lectures are free to the public.

THE number published on April 15th of the *Periodical*, a circular issued by the Oxford Press, announces that "the *Lancet* has come under the control of Henry Frowde and Hodder and Stoughton (Oxford Medical Publications), but there will be no change in the editor or the policy of the paper."

AT the meeting of the Röntgen Society in Manchester next Friday (May 6th), the afternoon session will begin in the Physics department of the University at 4.30, when a series of demonstrations will be given. There will be a dinner in the Refectory at 6.30, and the evening session, when the application of radiology to the examination of metals will be explained by Professor W. L. Bragg and the Director of Radiological Research, Royal Arsenal, Woolwich, will begin at 7.30. Saturday will be spent in visiting the *x*-ray and electrical departments of the Royal Infirmary and Radium Institute, and various works will be open to inspection. The meeting is open to non-members, who can obtain further particulars from the honorary secretary, Dr. R. W. A. Salmond, 51, Welbeck Street, London, W.1.

THE annual dinner of the Indian Medical Service will be held at the Trocadero on Wednesday, June 15th, Major-General Sir R. Havelock Charles, G.C.V.O., in the chair. Tickets and all particulars may be obtained from the joint honorary secretary, Colonel J. J. Pratt, I.M.S.(ret.), 63, Addison Road, Kensington, W.14.

DR. WILLIAM HUNTER will give a course of three Chadwick public lectures on the prevention and control of fevers in England, with special reference to the effect of the Public Health Acts (1848–1918). This review of a century's progress will be illustrated by maps and epidiascope pictures and diagrams. The lectures will be given at the house of the Medical Society of London (11, Chandos Street, W.1) on Thursdays, May 5th, 12th, and 19th, at 5.15 p.m.

THE Executive Council of the National Association of Insurance Committees, at a meeting held on April 15th, adopted a resolution placing on record its appreciation of the great service rendered by the Right Hon. Christopher Addison, M.D., M.P., in the cause of public health, and its grateful recognition of the prominent part he took in the establishment of National Health Insurance and his work as first Minister of Health. They expressed the hope that the policy initiated by him at the Ministry of Health will be vigorously pursued.

AN agreement has been made between Sweden, Norway, and Denmark to draw up a common pharmacopoeia.

THE celebrated anatomist and anthropologist Professor Heinrich Wilhelm von Waldeyer has recently died in Berlin in his 85th year.

THE first number of the *American Journal of Tropical Medicine*, bearing date January, 1921, has now reached this country. It is described as the official organ of the American Society of Tropical Medicine, and this first number contains the address of the president, and a report of the secretary for 1919–20, together with a list of members. The first paper consists of medical notes on the Dominican Republic and Haiti, and another deals with the carriers of *Entamoeba dysenteriae* among soldiers returned from overseas. Among the conclusions of this paper are that the number of carriers in the United States has been greatly increased by infections in soldiers returning from overseas, and that a larger number of carriers than has hitherto been suspected exists in the normal population. The annual subscription to British subscribers is 23s., and the publishers are Williams and Wilkins Company, Baltimore, U.S.A.

AT a meeting of the Naval, Military and Air Force Hygiene Group of the Society of Medical Officers of Health, to be held, with the kind permission of the Commandant of the College, at the Royal Army Medical College, Grosvenor Road, S.W.1, on Friday, May 6th, at 4 p.m., Lieut.-Colonel P. S. Lelean, C.B., Professor of Hygiene, will give a demonstration of "Sanitary appliances of interest to all health officers." The demonstration is open to all members of the society.

WE are asked to state that there is no foundation for the rumour that the baths at Harrogate are closing down owing to the coal strike.

THE Scottish Board of Health has issued regulations extending the period in which chicken-pox is compulsorily notifiable until October 1st, 1921.

SIR ARTHUR NEWSHOLME, K.C.B., arrived at Liverpool on April 25th, after completion of his engagement at Johns Hopkins University.

THE second annual dinner and reunion of officers of No. 20 General Hospital, B.E.F., will be held at the Florence Restaurant, Rupert Street, W.1, on Saturday, May 14th, at 7 for 7.30. Those who wish to be present are asked to apply on or before May 2nd to the Honorary Secretary, Mr. Harold Drinkwater, 7, Cavendish Place, W.1.

MAJOR J. H. DOUGLASS, O.B.E., M.D., R.A.M.C., of Lincoln's Inn, and Dr. T. M. Davie, M.C., of the Inner Temple, have been called to the Bar.

A COURSE of ten lectures on elementary psychotherapy will be given by Dr. H. Crichton Miller at the Kingsway Hall, Kingsway, W.C., on Fridays, beginning May 6th, at 5.15 p.m. The fee for the course is £2 2s. for medical practitioners and £1 1s. for medical students. Tickets can be obtained from the honorary lecture secretary, 51, Tavistock Square, W.C.1.

REUTER'S agent, telegraphing from Alexandria on April 21st, stated that plague had broken out in Egypt, a daily average of 35 cases being reported. Vessels are detained in quarantine at Alexandria. Three hundred and forty-two cases of plague occurred in Java during January, and 333 in February, all of which were fatal.

THE New York Institute of Radium has recently acquired 500 mg. of radium.

ABOUT a year ago we published a short note by Dr. D. W. Samways of Mentone about Brides-les-Bain, sometimes called the French Carlsbad, because the water very closely resembles the Sprudel source at Carlsbad, the total mineralization being about the same, the constituents very similar, and the quantity of free carbonic acid gas identical. Dr. Jean Leray, who practises at Brides, informs us that the establishment and baths have been greatly improved, as has also the hotel accommodation. The place is reached through Aix-les-Bains, the nearest station being Moutiers.

ON June 18th next will be celebrated the octocentenary of the founding of Reading Abbey by King Henry Beauclerc. In honour of the occasion Mr. Elliot Stock will publish an illustrated memorial volume by Dr. J. B. Hurry.

A SPECIAL meeting of the Fellows of the Royal Society of Medicine was held on April 25th to consider the recommendation of the Council that the subscription of all the Fellows in the London postal area should be raised to five guineas, and that of Fellows residing elsewhere in the United Kingdom to four guineas; to this recommendation an amendment was moved by Dr. H. H. Dale and seconded by Dr. W. Bulloch, to the effect that while the subscription for Fellows with an address within a mile of the Society's house should remain at five guineas as at present, and the subscription for Fellows residing elsewhere should be raised to four guineas, one guinea should be remitted from the subscription of any Fellow who did not desire to receive the *Proceedings*. In the discussion which ensued it became evident that the majority of those present were in favour of drastic reduction in the size and circulation of the *Proceedings*. It was pointed out that the proposal might have a serious effect on the original agreement for the amalgamation of the societies whereby the Royal Society of Medicine was formed. The amendment, however, was pressed on two grounds First, that the vote would afford evidence of the general feeling regarding the *Proceedings*, and secondly, that it would avoid resignations, especially from the "laboratory" sections. When put to the meeting, 84 voted for the amendment and 53 against. As a two-thirds majority was requisite, the amendment is not operative as it stands, but the suggestion it contains will be considered by the Council of the Society, and the matter brought before a future meeting of Fellows.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

"HEALTH OFFICER ABROAD" inquires for any official pamphlet on lethargic encephalitis.

*** The Ministry of Health, as recorded in our issue of March 5th, p. 357, has issued a pamphlet (H.M. Stationery Office, through any bookseller, 1d.) on the symptomatology, diagnosis, and treatment of lethargic encephalitis.

"PUZZLED" writes: Can anyone suggest a treatment for the most intolerable itching following supraorbital herpes. There is no pain, but the itching is so severe that the patient literally tears holes in her forehead and scalp. I have divided the supraorbital nerves, but with no benefit. The victim is a lady of 45, and the attack of herpes occurred in September, 1920.

X-RAY DERMATITIS.

"J. A. P." asks for advice in the treatment of a case of *x*-ray dermatitis on the back of the head and the front of the thighs. Only starch poultices give relief, but the trouble is slowly spreading; the patient is also suffering from nephritis.

INCOME TAX.

"A. G." inquires as to the allowance of expenses incurred in connexion with purchase and sale of cars. The transactions were as follows:

1913. 11.5 h.p. car (A) bought for £235.
1916. This having broken down and its immediate repair being impracticable another make (B) was bought for £135, and that amount was allowed by the tax inspector.
1920. The first car (A) was sold for £90, and a third car—11.9 h.p. (C)—bought for £545.

The inspector considers that for income tax purposes (C) is replacement of (B).

*** It seems to us that the net cost of using the (B) car was a special expense arising out of the break down of the (A) and was not a replacement. In that case "A. G." would be entitled to a further allowance as follows:

Gross cost in 1920 of a 11.9 h.p. (A) or equivalent—say ...		£500
Deduct		
(1) Amount obtained for (A)	£90	
(2) Amount obtained for (B)	85	
		175
Net amount to be allowed		£325

If (B) is to be regarded as a replacement of (A) and (C) as a replacement of (B) "A. G." is still entitled to a further allowance equivalent to the difference between the cost price of a 11.5 (C) in 1920 and £90 *plus* £135 (the original cost of (B)). The amount to be deducted from the expenses in respect of the private use of the car depends so much on the circumstances that no general rule, 10 per cent. or otherwise, seems applicable.

"X" gave up his practice and has since done work as a locum tenent. How does this affect his liability?

*** In our opinion the earnings as a general practitioner, assessable under Case I, Schedule D, cannot properly be averaged with prior or subsequent earnings as a locum-tenent, such earnings being the result of "employment" and consequent assessable under Case II, Schedule D. This contention is supported by the fact that the practitioner earnings fall into the average of the purchaser of the practice. We suggest that "X" should claim, as he has a legal right to do, to have his case set down for hearing by the Income Tax Commissioners and that he write to the inspector of taxes accordingly.

"IGNOTUS" asks: Can a salaried assessor of the Ministry of Pensions who, by the terms of his contract, is not allowed to practise, claim a deduction for expenditure on medical books and subscriptions to medical societies, both being necessary for keeping up his medical knowledge?

*** Yes, provided that the expenditure is exclusively incurred for that purpose; no doubt other purposes are also served to some extent, but it would seem to be splitting hairs to urge that the claim should be refused on that ground.

"E. M. D." inquires whether a grant from the Medical Research Council is liable to tax.

*** We understand that a substantial portion of the grant has been necessarily expended in carrying out the research for which the grant was paid. We are of opinion that for tax purposes the surplus over and above such expenditure must be regarded as a fee paid for work done, and as such is assessable. Particulars of the deductions claimed for expenses should be given on the space provided on the Schedule E form of declaration.

LETTERS, NOTES, ETC.

MESSRS. PARKE, DAVIS AND CO. have issued a descriptive catalogue of the products of their laboratories, which also contains in an "index of therapeutics" many suggestions for treatment. From the same firm comes the tenth edition of the little book entitled *Vaccine Therapy*, which contains instructions for using the vaccines prepared in the laboratory of St. Mary's Hospital. Considerable alterations have been made in this edition, and the sections relating to acne, streptococcal infections, influenza, typhoid fever and whooping cough have been largely rewritten, while the composition of the following vaccines has been altered: acne and mixed acne, antisepsis (mixed staphylococcus and streptococcus), and whooping-cough.

PENIS CAPTIVUS.

DR. J. R. W. STEPHENS (Withington, Manchester) writes: I have been asked to report the following two cases as being of interest: (1) During the latter part of 1918 I was called to see a warrant officer, R.N., aged about 54. The penis was enormously swollen and oedematous. There was no pain and no gangrene. The bladder was moderately full. The cause was an ordinary gold wedding ring. His explanation was that his wife had put it on him during the afternoon whilst he was asleep in a chair. It was possible to insert a director under the ring, but a Gigli's saw not being available, the man was sent to hospital, where the ring was removed; he made an uneventful recovery. (2) On March 31st, 1921, at 3.30 a.m., an unmarried man, aged 26, called, stating he was "in great trouble." He was found to be a case of "penis captivus" in the orifice of a large stone hot-water bottle, which still contained warm water. It was not possible to withdraw the organ, which was tightly constricted at its proximal end. With an ordinary nail hammer the bottle was broken by the second blow, and the distal end of the penis found to be swollen and oedematous. A third blow from the hammer removed the constriction, and the penis returned to normal, except for slight bruising, in two days. In this case also there was no complaint of pain.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 36, 37, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 34 and 35.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line...	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.